Input Indicators of the British Columbia High Technology Sector: 2014 Edition

PREPARED FOR THE MINISTRY OF TECHNOLOGY, INNOVATION AND CITIZENS' SERVICES BY BC STATS – JUNE 2015

BRITISH COLUMBIA | BCStats

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1. Executive Summary

The high technology sector is a vital part of the B.C. economy. The recognition of the importance of the sector to the province is reflected in its incorporation into the B.C. government's Jobs Plan. High technology firms tend to be innovative and efficient, creating goods and services that confer benefits on other parts of the economy by improving productivity and profitability, while at the same time providing relatively high-wage employment.

The 2014 edition of the *Input Indicators of the British Columbia High Technology Sector* report is prepared by BC Stats, and is the eleventh in a series of reports that began with the edition produced in 2000. This series of reports highlights some conditions affecting British Columbia's high technology sector from a supply-side perspective. This year, the report tracks the evolution of 53 business and economic climate indicators necessary for the development of the high technology sector in B.C. and provides comparisons to other provinces and Canada as a whole. The indicators cover key aspects of the educational, business, government, external, and labour sectors from the point of view of their impact on high technology firms. Included are indicators relating to the experience and labour outcomes of students graduating from high tech disciplines in British Columbia's public post-secondary institutions. A total of 14 indicators from the BC Student Outcomes survey data are included, along with supporting tables in the Appendices.

The indicators in this report, which can be termed "input" measures, are chosen for their relevance and general acceptance, as well as their availability on an ongoing basis. All indicators have been updated to the latest year for which data were available as of January 2015.

Indicators of the success, or "outputs" of the high technology sector, are covered by a companion report, the Profile of the British Columbia High Technology Sector. The Profile contains information on high technology GDP, employment, wages and salaries, revenues, establishment counts and exports and imports.

The picture of British Columbia that emerges from the most recent input indicators is varied. In many areas, British Columbia compares quite favourably with other provinces, and has shown notable growth. On the other hand, performance has lagged in other areas. As such, the detailed indicators have great potential for offering tangible direction for government policies and industry growth strategies.

The indicators covered in this report span available data for the most recent reporting years and, in many cases, date back at least a decade. Where available, data are included for other provinces. Regional data for British Columbia have not been incorporated into the report, due mostly to data restrictions and gaps in information. Similarly, international statistics have not been included, mainly because of the difficulty of making valid comparisons of indicators collected with varying definitions and against very different backdrops of social and economic organization.

1.1. Highlights

1.1.1. Education Sector

In general, British Columbia fares quite well in terms of performance in the education sector. B.C.'s universities have excelled in terms of technology licenses, start-up companies formed, and patents issued. The province also fares relatively well in funding for researchers in its educational institutions.

On the other hand, B.C. tends to lag other provinces in indicators of overall education attainment. Although the data for the last reporting year show that B.C. continues to have the highest percentage of the population with high school education, a rank it has held for nearly two decades, there is a deficiency with respect to the training of new graduates in some specific disciplines.

1.1.2. Business Sector

British Columbia returns above average ratings in about half of the business stimulus indicators. In 2014, B.C. scored particularly well in venture capital investment per capita, boasting a rate more than double the national average. Although the province's ratio of research and development (R&D) performance by business to provincial GDP declined in the last reporting year, B.C. still holds a solid ranking of third among the provinces.

British Columbia scores below average on some other business stimulus indicators, such as in patents issued, but showed signs of strength with growth in the number of high technology businesses.

1.1.3. Government Sector

Individual, small business and corporate taxation continues to be more favourable in B.C. than in most other parts of the country. All three levels of tax rates in the province have either shrank or remained stable over the last decade, and in 2015, remain among the lowest in the country.

As a share of GDP, B.C.'s combined federal and provincial government R&D activities are by far the lowest in the country. However, the province fares much better in terms of gross expenditure on R&D as a share of GDP.

1.1.4. External Sector

In relation to the size of its population, British Columbia is relatively on par with other provinces in attracting skilled immigrants, but their average level of education is slightly lower than in some other parts of the country.

After having experienced an outflow of people from B.C. to other parts of Canada in 2012 and 2013, net in-migration to the province rebounded in 2014. B.C. imports of high technology goods—which can be an indicator of future production since imported components are often used to produce high tech products—also increased in the most recent year.

1.1.5. Labour

The unemployment rate among workers in the natural and applied sciences dropped to 3.0 in 2014, and remained substantially lower than for the economy as a whole. Despite a decline in the province's research workforce in 2012 (the latest year for which data are available), British Columbia maintained a third place ranking in number of researchers per capita. B.C.'s largest city remains among the most desirable places to live in the world, ranking first in the Americas for quality of life, despite its somewhat high cost of living.

1.1.6. Post-Secondary Outcomes

Results from the most recent BC Student Outcomes surveys indicate that graduates from high technology-related disciplines continued to be satisfied with their education and found their studies useful in the workplace. Of those employed at the time of the survey, the majority were working in high technology occupations and found that their

educational training was relevant to their position. Most were paid workers (as opposed to self-employed) and worked full-time. Graduates working in high technology fields earned substantially more, on average, than those working in non-high tech occupations.

1.2. Indicator Summaries

An ongoing feature of this publication is the simple description of the trends in each indicator as up, down or stable (indicated in summary tables as: ↑,↓ or →). The assessment is made with regard to the trend over the span of time for which the data are available and for the latest period.[1] Also included is a comparison ranking B.C. with the provinces for each indicator. Since the last edition (2013), the trend in some indicators has been re-evaluated, based on the latest information. Table 1 provides a quick summary of trends and rankings for each indicator. Summary results for each sector are presented at the start of each section in the body of the report. More detailed statistical information is contained in the tables in the Appendix.

[1] Note that the fact an indicator may be rising in relation to other provinces does not necessarily indicate an advantage for British Columbia. For example, above average taxes would normally be viewed as a negative indicator from the point of view of the high technology sector. For this purpose, the summary arrows are colour-coded to indicate positive (green), neutral (yellow) or negative (red) trends.

TABLE 1: QUICK SUMMARY OF INDICATORS

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
EDUCATION SECTOR			
E-1: Percentage of population with a high school diploma	↑	↑	1 of 10
E-2: Percentage of pop. with post-secondary credentials	↑	↑	4 of 10
E-3: 13 year-old student achievement in science	↑	↑	3 of 10
13 year-old student achievement in math	→	↑	5 of 10
E-4: Total bachelor degrees awarded per 100,000	↑	↑	4 of 10
E-5: Total graduate degrees awarded per 100,000	↑	↑	5 of 10
E-6: Bachelor degrees awarded in engineering*	↑	↓	8 of 10
E-7: Bachelor degrees awarded in computer science*	↓	↑	4 of 10
E-8: Bachelor degrees awarded in physical & life sciences*		↓	7 of 10
E-9: Percentage of households with computers	↑	↓	3 of 10
E-10: Percentage of households using the Internet	↑	↓	2 of 10
E-11: Income from technology licenses at U-15 universities†	↓	↓	3 of 15
E-12: U.S. patents issued to U-15 universities‡		↑	4 of 7
E-13: University start-up companies formed‡	→	↑	3 of 7
E-14: Higher education performance of R&D (HERD) to GDP	↑		5 of 10
E-15: Per capita grants and awards funded by CIHR	n/a	n/a	3 of 10
E-16: Per capita projects funded by CFI: Health	n/a	n/a	4 of 10
E-17: NSERC grant & scholarship expenditures	↑	↑	4 of 10
E-18: Canada Research Chairs	n/a	n/a	3 of 10
BUSINESS SECTOR			
B-1: Patents per 100,000 persons		↑	6 of 10
B-2: Patents granted as a % of applications, 3 year average	↑	↑	7 of 10
B-3: Entries to the high tech sector		↑	n/a
B-4: Exits from the high tech sector	→	↓	n/a
B-5: High growth high tech companies		↑	n/a
B-6: Venture capital investment, total	n/a	n/a	2 of 10
B-7: Venture capital investment: share of Canadian total	n/a	n/a	2 of 10
B-8: Business expenditure on R&D (BERD) to GDP		↓	3 of 10
GOVERNMENT SECTOR			
G-1: Personal tax index individual with $80,000 income	↓	↑	1 of 10
G-2: Small business tax rate	→	→	3 of 10
G-3: Corporate income tax rate			2 of 10
G-4: Government expenditure on R&D (GOVERD) to GDP	↓	→	10 of 10
G-5: Gross expenditure on R&D (GERD) to GDP		↓	3 of 10
EXTERNAL SECTOR			
X-1: Percentage of immigrants with 16+ years of education		↑	8 of 10
X-2: Median years of schooling of immigrants	→	↓	7 of 10
X-3: Net inter-provincial migration	↓	↑	2 of 10
X-4: High technology imports	↑	↑	n/a
LABOUR			
L-1: Unemployment rate for natural and applied sciences		↓	4 of 10
L-2: Research personnel per 100,000 population	↑	↓	3 of 10
L-3: Quality of life, Vancouver∞	↓		5 of 221
L-4: Cost of living×	→	↑	10 of 11

Note: Ranking is across the ten provinces unless otherwise indicated in the following footnotes.
* The tables for these indicators are split into part (a) for Bachelor degrees and part (b) for Graduate degrees. Data for degree area of engineering include architecture, engineering and related technologies; data for degree area of computer science include mathematics, computer and information sciences. Ranking is measured on a per capita (per 100,000 persons) basis.
† The ranking compares UBC to all U-15 universities.
‡ This indicator is a sum of the U-15 universities. The ranking is out of 7 because only 7 provinces have U-15 universities.
∞ The ranking compares Vancouver to 221 cities worldwide.
× The ranking compares Vancouver to 10 other Canadian cities.

INDICATORS	DACSO Graduates		BGS Graduates	
	High Tech Program	Non-High Tech Program	High Tech Program	Non-High Tech Program
O-1: Satisfaction with education	93%	93%	92%	94%
O-2: Quality of instruction~	95%	95%	92%	95%
O-3: Further studies since graduation	31%	35%	56%	54%
O-4: Current activity:				
Studying	12%	8%	23%	9%
Studying and working	13%	19%	15%	19%
Working	65%	63%	56%	65%
Neither studying nor working	9%	10%	7%	7%
O-5: In the labour force	88%	91%	78%	90%
O-6: Employment rates	79%	82%	70%	83%
O-7: Unemployment rates	10.1%	9.4%	9.7%	7.3%
O-8: Job related to training^	82%	76%	71%	73%
O-9: Knowledge, skills & abilities useful in job^	86%	83%	81%	85%
	DACSO Graduates		BGS Graduates	
	Employed in High Tech Occupations	Not Employed in High Tech Occupations	Employed in High Tech Occupations	Not Employed in High Tech Occupations
O-11: Training related to job^	93%	77%	85%	73%
O-12: Paid worker^!	95%	95%	95%	95%
O-13: Full-time employment^	86%	76%	96%	82%
O-14: Median income (hourly for DACSO, annual for BGS)	$25	$19	$57,000	$44,200

~ On the DACSO Survey, quality of instruction was asked using a 5-point scale: very good, good, adequate, poor, and very poor. Percentages presented for DACSO quality of instruction include very good, good, and adequate. On the BGS Survey, quality of instruction was asked using a 4-point scale: very good, good, poor, and very poor. Percentages presented for BGS quality of instruction include very good and good.
^ Of those respondents who indicated they were employed.
! In the DACSO Survey, respondents were asked if they were paid workers or self-employed. In the BGS Survey, respondents were asked if they were paid workers, self-employed, or both a paid worker and self-employed. Percentages presented for the BGS Survey represent the percentage of respondents who indicated they were solely a paid worker and those who indicated they were both a paid worker and self-employed.
Note that data from the DACSO and BGS surveys are for British Columbia only and, therefore, provincial comparisons are not available. Due to small numbers, three years of data had to be combined in order to be able to present reportable figures. As a result, time series comparisons are not possible either. Indicator O-10 is not amenable to a quick summary presentation and, therefore, is excluded here.

2. Introduction

2.1. Background

Although industry has been knowledge- and technology-based throughout history, information as a driver of economic growth has grown dramatically in importance in the last quarter-century. Global and local economies alike are now far more dependent on the production, dissemination and use of knowledge. High technology industries rely heavily on knowledge as a primary input. As such, these industries are obvious starting points for measuring the impact of new knowledge-based technologies on economies.

The first edition of this report, High Technology Input Indicators: the 1990s, was released in 2000. The purpose of the report was to monitor the high technology sector from the input side, by measuring and analysing the production and application of knowledge, and the climate, institutions and funding arrangements that make this knowledge available for the development of the provincial high technology sector. The report has been updated regularly since then, this being the eleventh edition.

A companion report, *Profile of the British Columbia High Technology Sector*,[2] has been produced regularly since 1994. The profile focuses on measures of Gross Domestic Product (GDP), employment, wages and salaries, revenues, establishments, and exports and imports. Such measures could be referred to as the outputs of the high technology sector and aim to give a broader overview of where B.C.'s high technology sector has been and where it might be heading.

While there is obvious value in monitoring the "output" of the high technology sector, information about the processes that give rise to that output are also of key importance, both for potential investors interested in the infrastructure available in the province and for policy-makers who require this data to make informed policy decisions. In fact, the high technology sector and the surrounding infrastructure are a complex system with many players and interactions. Understanding this system is a matter of identifying the various parts and collecting information that shows how these parts behave and interact over time. For a more detailed description of the high technology "system," see Appendix I. A list of industries that are included in the high tech sector is available in Appendix II.

[2] Available at www.bcstats.gov.bc.ca

Information on the high technology system can help show the best ways to promote growth in the sector. This may include assistance to parts of the system that are only indirectly linked to actual production. For example, improvements to the secondary school system may seem very different from output subsidies or tax cuts for high technology firms, but both may have the effect of promoting growth in the high technology sector in the long term. Good information provides policy makers with the tools to assess the current situation, as well as an indication of where more effort may be needed to provide an environment in which high technology and other knowledge-based industries can thrive.

2.2. Comparison with Other Jurisdictions

Wherever possible, the indicators selected for this publication use comparisons to other provinces and show the range of what is possible, or what has been achieved, in the high technology sector within a Canadian context. The publication focuses on trends in British Columbia as they compare to those in other provinces.

2.3. The "Quick Summary" Tables

The indicators selected for this publication represent only a fraction of the information base that is available for the high technology sector. However, even this number of indicators measured over time and across provinces poses a challenge to readers looking for an overview of the current situation and an indication of which areas warrant further study. To meet this challenge, this report is first divided according to the "sectors" outlined in the model diagram (see Appendix I). Each of the resulting sections covers a number of individual indicators.

The summary makes use of up, down and horizontal arrows (↑,↓,→) to show whether the indicator has risen, dropped or remained relatively stable. The assessment is made with regard to the trend over the span of time for which the indicator is available and for the latest period. The summary arrows are colour-coded to indicate positive (green), neutral (yellow) or negative (red) trends. Wherever possible, British Columbia is also ranked against other provinces for each indicator.

Since the arrow indicators show only the direction of change, the summary report gives no indication of the size of changes or their detailed pattern over time. This information is found in the graphs and text included in each section. More comprehensive data tables for each indicator are located in Appendix III.

Some indicators are not available as a time series; however, they provide information that better reveals the big picture with regard to the condition of high technology in British Columbia and in other parts of the country. Although included in the Quick Summary tables for reference purposes, these indicators do not have corresponding arrow symbols, but are instead marked with 'n/a', where comparisons over time or to other regions are not possible.

3. Educational Indicators

The educational sector provides inputs to high technology firms in three ways:

1. When individuals acquire skills and knowledge required for product development and production;
2. During the commercialization of research performed in the educational sector; and
3. Funding and performance in research and development.

The indicators listed below are measures of these roles. Many are presented on a per capita basis (expressed as rates per 100,000 population where per capita figures are quite small), as regional shares of national totals, or as a share of Gross Domestic Product (GDP) to allow meaningful comparison with other provinces.

TABLE 2: QUICK SUMMARY OF INDICATORS FOR THE EDUCATION SECTOR

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
E-1: Percentage of population with a high school diploma	↑	↑	1 of 10
E-2: Percentage of pop. with post-secondary credentials	↑	↑	4 of 10
E-3: 13 year-old student achievement in science	↑	↑	3 of 10
13 year-old student achievement in math		↑	5 of 10
E-4: Total bachelor degrees awarded per 100,000	↑	↑	4 of 10
E-5: Total graduate degrees awarded per 100,000	↑	↑	5 of 10
E-6: Bachelor degrees awarded in engineering*	↑	↓	8 of 10
E-7: Bachelor degrees awarded in computer science*	↓	↑	4 of 10
E-8: Bachelor degrees awarded in physical & life science*	→	↓	7 of 10
E-9: Percentage of households with computers	↑	↓	3 of 10
E-10: Percentage of households using the Internet	↑	↓	2 of 10
E-11: Income from technology licenses at U-15 universities†	↓	↓	3 of 15
E-12: U.S. patents issued to U-15 universities‡	→	↑	4 of 7
E-13: University start-up companies formed‡		↑	3 of 7
E-14: Higher education performance of R&D (HERD) to GDP	↑	→	5 of 10
E-15: Per capita grants and awards funded by CIHR	n/a	n/a	3 of 10
E-16: Per capita projects funded by CFI: Health	n/a	n/a	4 of 10
E-17: NSERC grant & scholarship expenditures	↑	↑	4 of 10
E-18: Canada Research Chairs	n/a	n/a	3 of 10

* The tables for these indicators are split into part (a) for Bachelor degrees and part (b) for Graduate degrees. Data for degree area of engineering include architecture, engineering and related technologies; data for degree area of computer science include mathematics, computer and information sciences.
† The ranking compares UBC to all U-15 universities.
‡ This indicator is a sum of the U-15 universities. The ranking is out of 7 because only seven provinces have U-15 universities.

Historically, British Columbia's general population has had particularly strong educational attainment. Data for the most recent reporting year show that the province continues to boast the highest percentage of its population with a high school education. Despite the high proportion of high school graduates, B.C. exhibits somewhat of a deficiency with respect to the training of new graduates in engineering, and physical and life sciences. Similarly, the provincial ratio of higher education research and development (R&D) to GDP is low when compared to national standards. Nevertheless, in terms of providing a hospitable landscape for innovation in scientific research, B.C. presents itself relatively well.

3.1. Educational Attainment

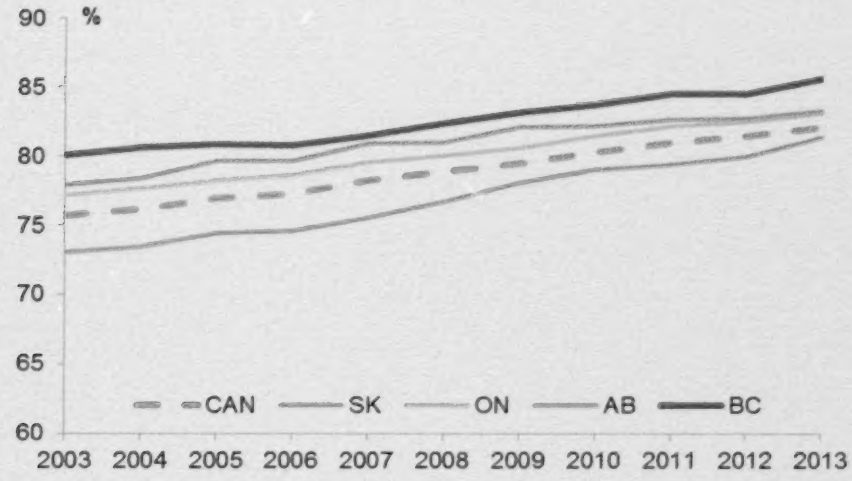
The indicators understood:

Higher levels of educational attainment enable high technology firms to draw from a broader, more highly-developed skill base. Higher levels of educational attainment also suggest a more knowledgeable population that is better able to understand and participate in the complexity of the high technology economy.

As in other parts of the country, the number of British Columbians that have completed high school and have continued their education by obtaining post-secondary credentials has been on the rise. Four indicators of educational attainment—the percentage of the population aged 15 and older with a high school diploma, the percentage with post-secondary credentials, and the ratios of undergraduate and graduate degrees awarded in the provinces—have all shown steady increases across most of the country in the last ten years.

As seen in figure E-1, in 2013, B.C. continued to lead the country with the highest percentage of its population having a high school diploma (86%), as it has since at least 1990. In that year, 72% of its population aged 15 and over had graduated from high school, compared to the Canadian average of 64%. However, the gap between B.C. and the other provinces is gradually narrowing. In 1990, a full seven percentage points separated British Columbia (72%) and Ontario (65%), and there was an even larger gap between B.C. and Newfoundland and Labrador (52%). By 2013, more than 20 years later, the share of B.C.'s population with a high school diploma was only three percentage points higher than in Ontario (83%) and nine percentage points higher than Newfoundland and Labrador (77%).

INDICATOR E-1: PERCENTAGE OF THE POPULATION 15 YEARS AND OLDER WITH A HIGH SCHOOL DIPLOMA

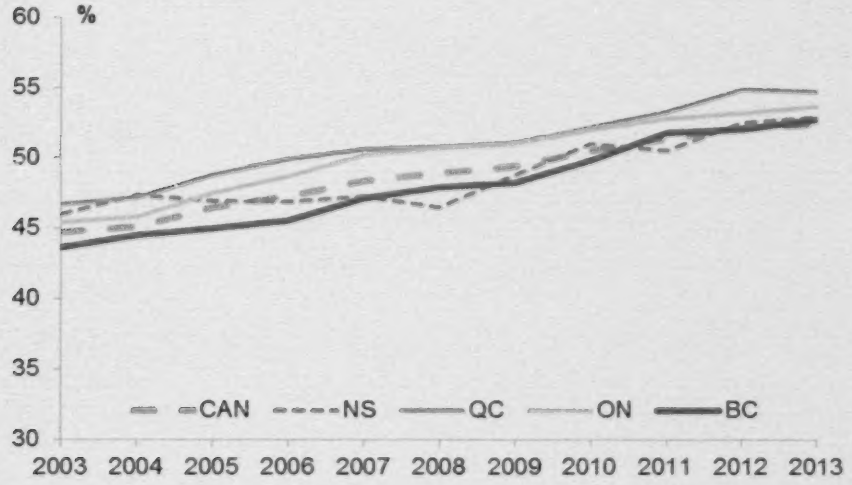


Data source: Statistics Canada

B.C. continues to lead the country in share of population with a high school diploma

British Columbia has improved its post-secondary achievement over the past decade. As the following chart illustrates, the gaps in proportion of population with post-secondary credentials among the provinces are relatively small. In 2013, B.C.'s rate remained on par with the national average (each 53%). In that same year, Quebec had the highest rate (55%), while Manitoba (44%) continued to score below the rest of the country.

INDICATOR E-2: PERCENTAGE OF THE POPULATION 15 YEARS AND OLDER WITH POST-SECONDARY CREDENTIALS



Data source: Statistics Canada

The percentage of B.C.'s population with post-secondary credentials continues to climb and remained on par with the national average

3.2. Achievement on Canadian Standardized Tests

The indicator understood:

Standardized testing offers a comparable nation-wide measure for the demonstrated skills and knowledge of students of a given age. School programs differ from one part of the country to another, so making comparisons of results from these various programs is a complex task. However, young Canadians in different provinces and territories learn many similar skills in mathematics and science.[3]

For the purposes of the Pan-Canadian Assessment Program (PCAP), three competencies are associated with demonstrating scientific literacy: science inquiry, problem solving and decision making. Each of these competencies requires an understanding of the nature of science, applying relevant scientific knowledge, using skills and demonstrating attitudes as a reflection of scientific literacy.

Mathematics curricula within the various Canadian jurisdictions are similarly structured and based on a number of mathematical processes deemed essential to the effective study of the subject. These generally include problem solving, reasoning and justifying thinking, reflecting, using appropriate tools and computational strategies, making connections within and outside the discipline, representing and communicating mathematically.

As detailed in the table E-3 (A), in 2013, the mean scores in science for students in Alberta (521) and Ontario (511) were much higher than those obtained by Canadian students overall (500). With a mean score of 501, B.C. students did not fare quite as well, but remained above the national average. Thirteen year-old students in most other provinces scored under the Canadian average. In terms of provincial ranking, British

[3] The School Achievement Indicators Program (SAIP) was a cyclical program of pan-Canadian assessments of student achievement in mathematics, reading and writing, and science that was conducted by the Council of Ministers of Education, Canada (CMEC) between 1993 and 2004. The Pan-Canadian Assessment Program (PCAP) has since replaced SAIP, with its first assessment conducted in the spring of 2007 and the first report released in the spring of 2008. PCAP is administered every three years. The Pan-Canadian Assessment Program evaluations help to determine whether students across Canada reach similar levels of performance at about the same age. Students' total scores in each subject area are transformed onto a common scale, ranging from 0 to 1000, with the average for the pan-Canadian population set at 500. Since this is a new assessment program, 2007 and 2010 are the only reporting years for which data has been released to date. Also, the only age-group measured thus far is 13 year-old students. As a result, the scores reflect a mere snap-shot of the provincial standing in standardized tests. It remains to be seen, as the program progresses and further data are collected, how the provinces fare in terms of improvements or changes on a comparative and time-series basis.

Columbian students were positioned third among the 10 provinces, directly behind Ontario. British Columbia's students fared slightly better in science achievement tests than in mathematics.

INDICATOR E-3 (A): CANADA-WIDE RANK OF 13 YEAR-OLD ACHIEVEMENT IN SCIENCE (MEAN SCORES)

	2010	2010 rank	2013	2013 rank
Alberta	515	1	521	1
Ontario	510	2	511	2
British Columbia	**497**	**3**	**501**	**3**
Newfoundland and Labrador	487	7	500	4
Nova Scotia	489	5	492	5
Prince Edward Island	493	4	491	6
Saskatchewan	488	6	486	7
Quebec	486	9	485	8
New Brunswick	487	7	469	9
Manitoba	486	9	465	10
Canada	500	n/a	500	n/a

Data source: Council of Ministers of Education, Canada

B.C.'s young students hold a third-place ranking in achievement in Science

In 2013, Quebec (527) and Ontario (512) took the top two places nation-wide in student achievement in mathematics. British Columbian students ranked fifth among the provinces (489), 18 points below the Canadian mean (507). Despite their low scores, 13 year-old students in B.C. recorded a mean higher than that of their counterparts in five provinces.

INDICATOR E-3(B): CANADA-WIDE RANK OF 13 YEAR-OLD ACHIEVEMENT IN MATHEMATICS (MEAN SCORES)

	2010	2010 rank	2013	2013 rank
Quebec	515	1	527	1
Ontario	507	2	512	2
Alberta	495	3	502	3
Prince Edward Island	460	10	492	4
British Columbia	**481**	**4**	**489**	**5**
Saskatchewan	474	6	488	6
Nova Scotia	474	6	488	6
Newfoundland and Labrador	472	8	487	8
New Brunswick	478	5	480	9
Manitoba	468	9	471	10
Canada	500	n/a	507	n/a

Data source: Council of Ministers of Education, Canada

B.C. students rank fifth in the country in mathematical achievement

3.3. Degrees Awarded

The indicators understood:

In a healthy economy, local industry provides jobs and the community provides the workforce to sustain the growth of the economy. Jobs in the high technology industry require specialized skills training. The number of degrees awarded within a given population is directly indicative of the potential human resources available to the province. Focusing on the degrees awarded on a per capita basis provides some indication of the overall education level of the province and the ability of the high tech sector to use these educated individuals. It is equally important to acknowledge the number of degrees awarded in absolute numbers. This is an indicator of the size of the domestic labour pool available from which high technology firms can draw and, ultimately, whether a province has sufficient qualified people to support an industry. Engineers, computer and information scientists, and physical and life scientists are driving forces behind the high technology sector. They provide a highly specialized form of labour that is integral to research and development. Looking at how well B.C.'s universities are doing to meet workforce demand and the interest in technology-related careers provides some measure of the province's capacity to supply the high tech economy. The geographical availability of people trained in these fields lowers the search costs for firms that demand these skills. Furthermore, individuals educated in such fields are often engaged in the design and integration of new technologies into a firm's business model.

The likely presence of skilled and educated professionals in a high technology economy is indicated by the number of graduates per 100,000 persons aged 15 years and older who hold undergraduate and graduate degrees. For these indicators, British Columbia continues to rank below the Canadian average.[4]

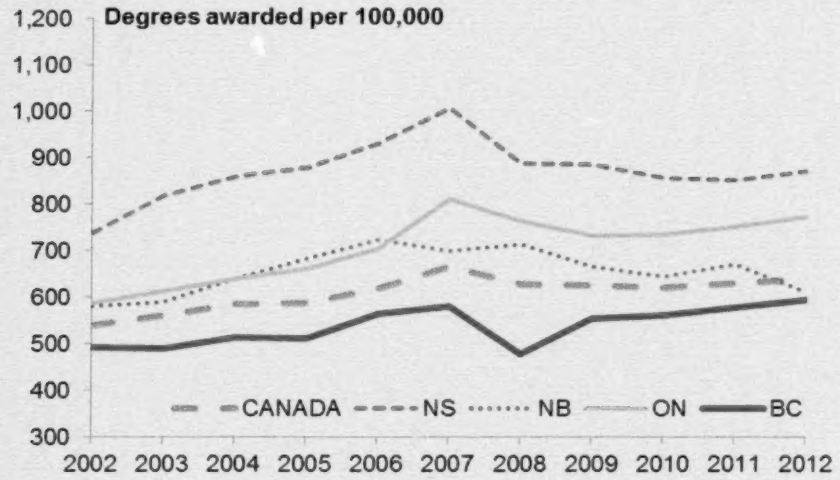
While the actual number of undergraduate degrees granted has generally been rising in B.C. over the past ten years, the province has consistently remained lower than most

[4] It is important to note that measuring the number of degrees awarded by British Columbia's institutions does not only measure degrees awarded to British Columbians. As such, this is not a perfect measure of the overall educational level of the population of British Columbia. Given the fact that students travel to various locations to pursue a post-secondary education, it is extremely difficult to measure how many British Columbians acquire a specific degree in a given year, and it is not feasible to know whether they return to B.C. after completing a degree elsewhere. Nonetheless, much of the student-body who attend the province's universities are, in fact, permanent residents of B.C. and the number of degrees granted by B.C.'s institutions is a direct indicator of the expertise of the labour pool available to the high technology sector regardless of where a student comes from. The number of degrees granted in B.C. is also an indicator of the appeal of the province's higher-education institutes and how many students from other provinces and around the world choose to pursue an education in British Columbia. Using a per capita calculation is a better gauge of B.C.'s performance in degree granting relative to other provinces.

provinces in terms of degrees granted per 100,000 persons. However, figure E-4 shows that in 2012 (the latest year for which data are available), the number of undergraduate degrees awarded in B.C. per 100,000 people (595) was up substantially from 2011 (577), surpassing both P.E.I. and Manitoba to rank fourth. B.C. also fares well in absolute terms, awarding the third highest number of degrees in the country. In 2012, universities in the province granted 22,989 undergraduate degrees, compared to 18,429 in neighbouring Alberta.

INDICATOR E-4: TOTAL BACHELOR DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER

In 2012, B.C. awarded more bachelor degrees per capita than any other western province

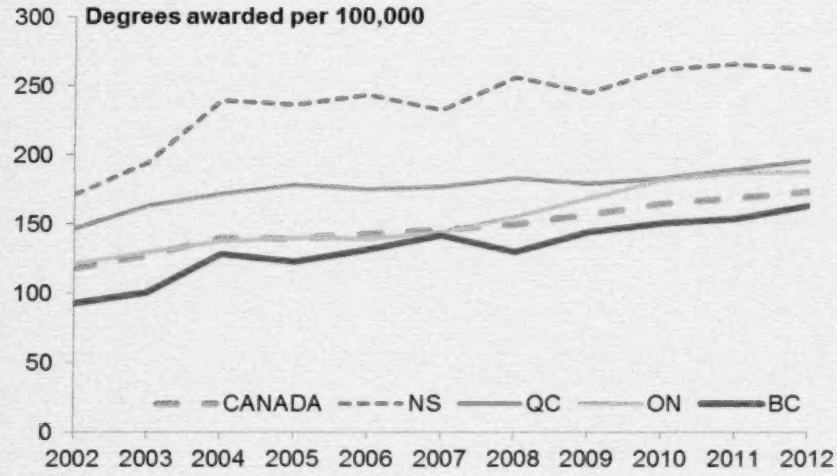


Data source: Statistics Canada

British Columbia has also seen a rise in the actual number of graduate degrees granted in recent years, with 2012 marking the fourth consecutive year of increases—an increase of 1,548 in four years. In 2012, the province's institutions awarded 6,318 graduate degrees, up from 5,868 in 2011. Most other provinces also awarded more masters' and doctorates in 2012, with the exception of Saskatchewan, P.E.I. and Nova Scotia. The number of graduate degrees awarded in B.C. has also experienced strong long-term growth, more than doubling between 2002 and 2012. This steady increase has allowed B.C. to retain a third place ranking among the provinces, well ahead of Alberta (4,272 in 2012).

As illustrated in figure E-5, in terms of graduate degrees awarded per capita, Nova Scotia (262 degrees per 100,000 persons) soared above the rest of the country in 2012. Quebec, Ontario and Newfoundland and Labrador also reported numbers higher than in B.C. (164). In 2012, B.C. recorded a notable increase (+6.4% from 2011) in the number of graduate degrees awarded per 100,000 persons, but continued to rank fifth among the provinces.

INDICATOR E-5: TOTAL GRADUATE DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER

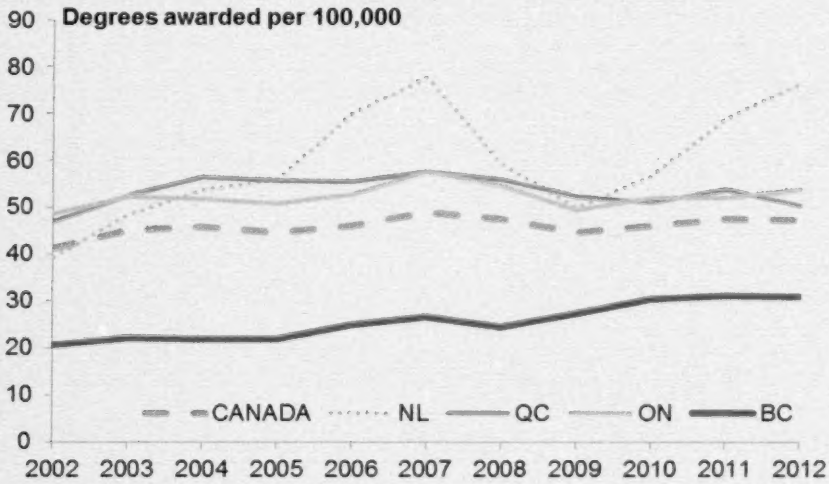


Data source: Statistics Canada

The actual number of graduate degrees awarded per year in B.C. more than doubled over the past decade, such that the province's per capita rate is on the rise

Among specific disciplines, British Columbia tends to lag other provinces in the number of undergraduate and graduate degrees awarded per year (see Figure E-6). In 2012, on a per capita basis, the province ranked eighth in number of both graduate and undergraduate degrees awarded to students of architecture, engineering and related technologies. However, in actual numbers, the province has seen a noteworthy increase in graduates (of all levels) from this field over the past decade.

INDICATOR E-6: BACHELOR DEGREES AWARDED IN ARCHITECTURE, ENGINEERING AND RELATED TECHNOLOGIES PER 100,000 PERSONS AGED 15 AND OLDER

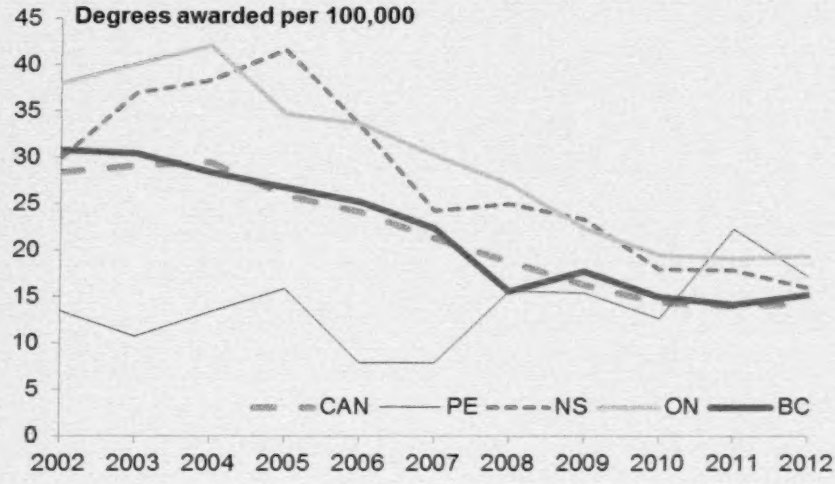


Data source: Statistics Canada

B.C. ranks eighth among the provinces in architecture and engineering degrees awarded per capita

The province fares much better in terms of the number of undergraduate degrees awarded in the area of mathematics, computer and information science. British Columbia's ratio (15.1 degrees per 100,000 persons in 2011) is much lower than it was a decade ago but continues to rank fourth among the provinces, above the Canadian average (14.3) for this indicator.

INDICATOR E-7: BACHELOR DEGREES AWARDED IN MATHEMATICS, COMPUTER AND INFORMATION SCIENCES PER 100,000 PERSONS AGED 15 YEARS AND OLDER



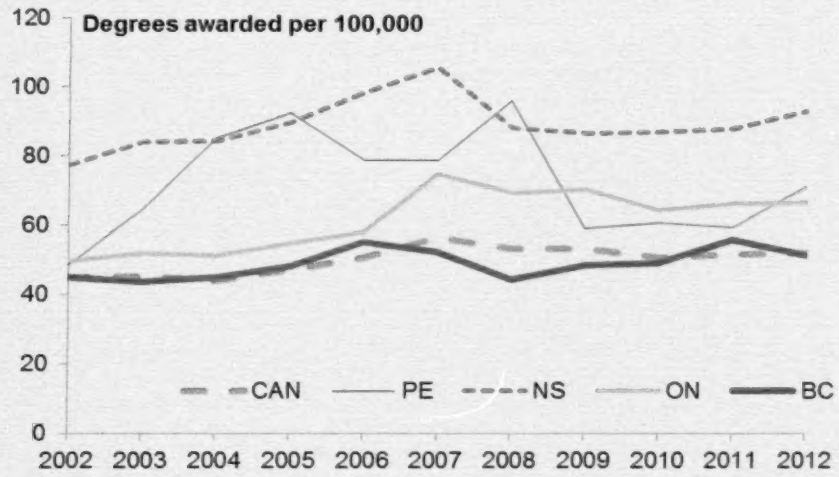
Data source: Statistics Canada

B.C. shows strength in bachelor degrees awarded per capita in math, computer and information sciences, despite a general downward trend across the country over the past decade

In terms of graduate degrees awarded per 100,000 persons in mathematics, computer and information sciences, B.C. (10 in 2012) ranked third among the provinces, behind only Ontario (11) and Nova Scotia (13).

As seen in the chart E-8, at 51 per 100,000 persons in 2012, the number of B.C. graduates with a bachelor degree in the area of physical & life sciences & technologies was on par with the Canadian average (52).

INDICATOR E-8 BACHELOR DEGREES AWARDED IN PHYSICAL AND LIFE SCIENCES AND TECHNOLOGIES PER 100,000 PERSONS AGED 15 YEARS AND OLDER



Data source: Statistics Canada

Per capita degrees awarded annually in physical and life sciences and technologies are slightly below average in B.C.

In the same year, B.C. awarded 13 graduate degrees per 100,000 persons in physical and life sciences and technologies, also below the Canadian average (16).

3.4. Technology Adoption

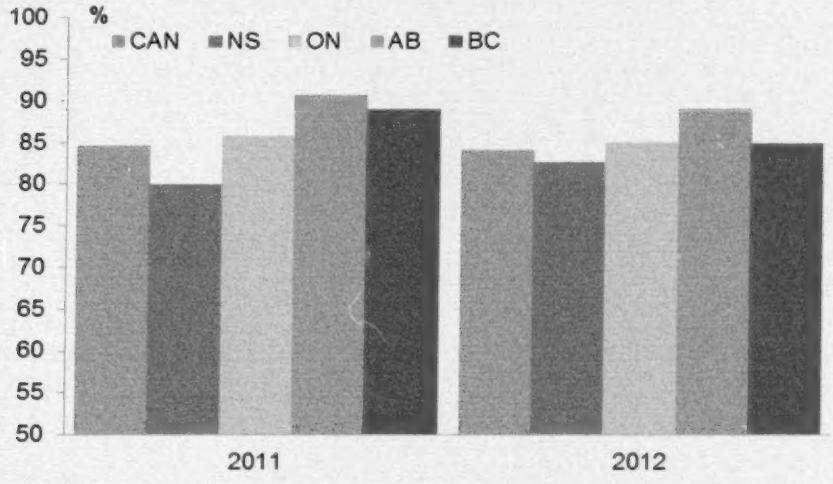
Why are these indicators important?

The rate of technology adoption is an indicator of the willingness of the population to employ the advantages afforded by high technology. High technology businesses are attracted to locations where the population tends toward higher rates of technology adoption. Greater familiarity with technology—for example, computer literacy—is likely to strengthen local market demand for high tech goods and services. Also, the acceptance of Internet and e-business technologies means small businesses can reach a world-wide market, reduce the time and cost per transaction and eliminate much of the capital investment required in typical operations.

With increased globalization, and the rising popularity of new and innovative forms of communication, Canadians continue to make greater use of new information technologies at home and in the workplace. For instance, households in every province across the country have recorded significant increases in the use of personal computers. In 2012 (the latest year for which data are available), nearly all (84%) of the nation's homes reported having a home computer, up from a mere 64% in 2002. The prevalence of home computers in B.C. has historically been among the highest in the country. This

held true in 2012, when 85% of the province's households had computers. Interestingly, as shown in figure E-9 the percentage of households reporting a home computer fell in several provinces for the first time in 2012. This decrease could reflect the widespread rise in popularity of mobile computing devices.

INDICATOR E-9: PERCENTAGE OF HOUSEHOLDS WITH HOME COMPUTERS

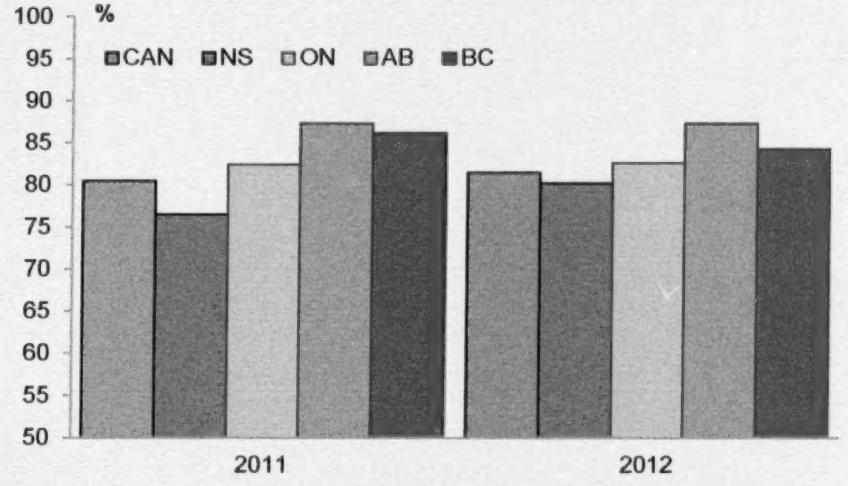


The share of households with home computers has declined in some provinces, as well as for Canada as a whole

Data source: Statistics Canada

From 2002 and 2009, British Columbia led the country in percentage of households reporting home Internet access. Despite being surpassed by Alberta in 2010, B.C. (84%) remained well above the Canadian average (82%) in 2012. However, B.C. was the only province to see its ratio fall between 2011 (86%) and 2012.

INDICATOR E-10: PERCENTAGE OF HOUSEHOLDS WITH INTERNET ACCESS FROM HOME



Households in B.C. and Alberta are the most likely in the country to have in-home Internet connections

Data source: Statistics Canada

3.5. Technology Licensing

Why are these indicators important?

University faculty members are at the forefront of research and their work often involves partnerships with the private sector for either expertise or equipment. This collaboration has many outcomes, including grants, contribution agreements and negotiated contracts whereby the institution and the researcher share in the payoffs. One way of measuring successful collaboration and research productivity is through university technology licenses. These licenses allow the institution to 'spin-off' the commercial aspect of the researcher's discovery, which provides income. Looking at the income per license provides a picture of the commercial success of the research. The number of U.S. patents issued to Canadian institutions and the creation of university start-up companies are also important indicators of future revenues.[5]

In the mid-1980s, universities across Canada began opening industry liaison offices. Primarily, these offices are responsible for negotiating research and development collaborations with businesses and public and private organizations. They also work to ensure the protection of research work developed at the university, especially that with commercial potential. These offices work with industry to spin-off technology developed at the university into successful start-up companies.

Due in part to the volatile nature of innovative research, there has been a great deal of shuffling of ranks among Canada's major U-15 (formerly G-10 and G-13)[6] universities over the past decade. In 2013, the University of British Columbia (UBC) ranked third in the number of licenses received, but lost out to several others in terms of the average gross income per technology license. UBC also yielded substantially less income from

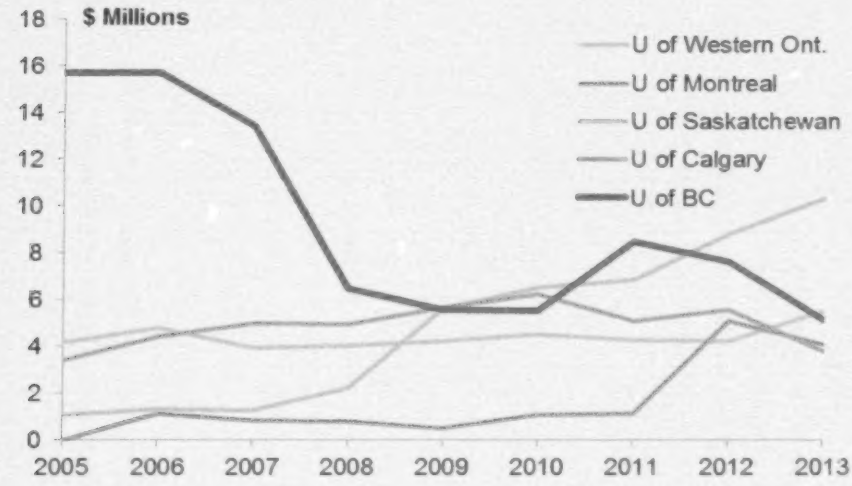
[5] As a caution, one must keep in mind that a key purpose of universities is to conduct "primary" research—work that does not have any immediate commercial application. This work, when successful, becomes the foundation of further applied research and development. A good example is the Human Genome Project, which recently completed mapping out the genetic structure of the human being. Thus, licensing only provides a partial view of the importance of university research in the high tech sector.

[6] 'U-15' Universities are the leading research universities in Canada and originally included the following institutions as part of the 'G-10' group: University of British Columbia (B.C.), University of Alberta (Alberta), University of Toronto (Ontario), Queens University (Ontario), University of Waterloo (Ontario), McMaster University (Ontario), University of Western Ontario (Ontario), Université de Montréal (Quebec), McGill University (Quebec), and Université Laval (Quebec). As of 2006, three more universities were added to the group, expanding it from 10 institutions to 13. The three universities added were: University of Calgary, Dalhousie University and University of Ottawa. In 2011, a further two institutions were added (University of Manitoba and University of Saskatchewan) and the group was renamed 'U-15.' The data for these and some other universities do not go back as far as the original ten. Note also that there are some other Canadian institutions that are highly active in technology research, but are not members of the U-15 group and, as such, are not included in this analysis.

licenses and options in 2013 ($5.1 million) than it had in the previous year ($7.6 million in 2012). However, as figure E-11 shows, this drop-off was not unique to UBC as a similar pattern was seen in many of the nation's institutions. Despite the decline, UBC continued to outperform most other universities. The University of Saskatchewan ranked first in 2013, with $10.3 million in income from technology licensing, followed by the University of Western Ontario ($5.5 million) and UBC.

B.C.'s Simon Fraser University (SFU) and the University of Victoria (UVic), though not classified as U-15 universities, also contribute to the province's strength in technology licensing. Despite the downward trend among many of the country's top universities in recent years, SFU recorded a surge in income from technology licensing in 2013. UVic, on the other hand, saw its total decline. SFU yielded an average of $340,000 per technology license in 2013, substantially higher than UVic's average ($11,000).

INDICATOR E-11: GROSS INCOME FROM TECHNOLOGY LICENSES (IN MILLIONS OF $CDN) AT TOP-PERFORMING U-15 UNIVERSITIES



Data source: Association of University Technology Managers

Licensing income has decreased at UBC, but remains above most other leading Canadian institutions

B.C. has consistently had strong results in terms of the number of U.S. patents awarded to its top institution (UBC). In 2005, UBC was issued 25 U.S. patents, just shy of the total for Ontario's six U-15 (G-13 at the time) universities combined (29 patents). UBC remains among the top players in the country. Acquiring a cumulative 77 U.S patents between 2009 and 2013, UBC ranked second among the U-15 universities in the last five reporting years. This was just behind McGill, which ranked number one, with 80 U.S. patents over the same period. In 2013 alone, UBC added 21 U.S. patents, the highest number of all U-15 institutions in that year. As these patented discoveries are

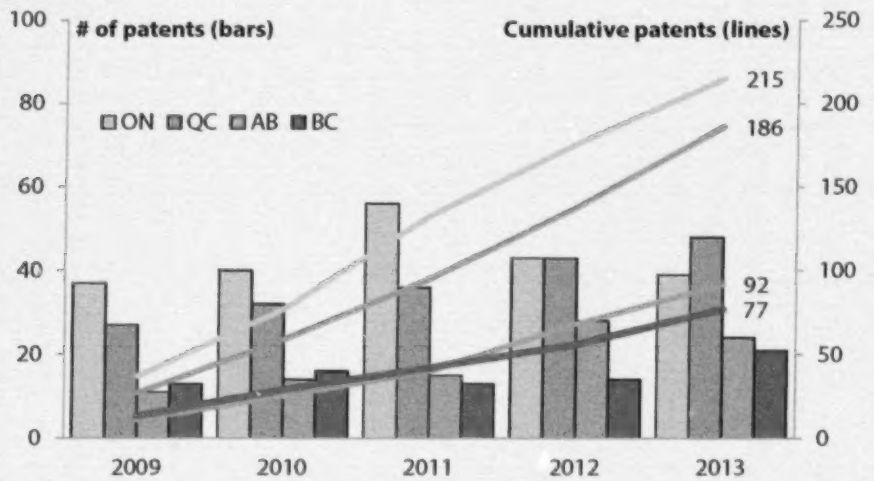
developed, so too is the potential for technology licenses that should translate into higher revenues for B.C. in future years.

As illustrated in figure E-12, on a provincial level, B.C. ranked fourth among the seven provinces with U-15 universities in terms of the number of U.S. patents granted in the last five reporting years. Over the same period, Ontario (215) led the pack, followed by Quebec (186).

When one considers that B.C. is home to only one of Canada's U-15 universities, while Quebec and Ontario each house several and Alberta is home to two, the number of U.S. patents issued in the province is even more impressive.

Simon Fraser University and the University of Victoria added to the overall U.S. patents issued in B.C.'s higher education sector in 2013, receiving 10 and 27 U.S. patents, respectively.

INDICATOR E-12: U.S. PATENTS ISSUED TO SELECTED INSTITUTIONS, ACTUAL AND CUMULATIVE[7]



Note: Data for the University of Calgary for 2011 are unavailable and are not included in Alberta figures.
Data source: Association of University Technology Managers

Between 2009 and 2013, UBC has ranked among the top few universities in the country in terms of patents issued

Academic discovery fuels the formation of new and innovative business. Start-up companies[8] are a major part of the innovation process and their activity is a significant

[7] Data includes all U-15 universities from each respective province.

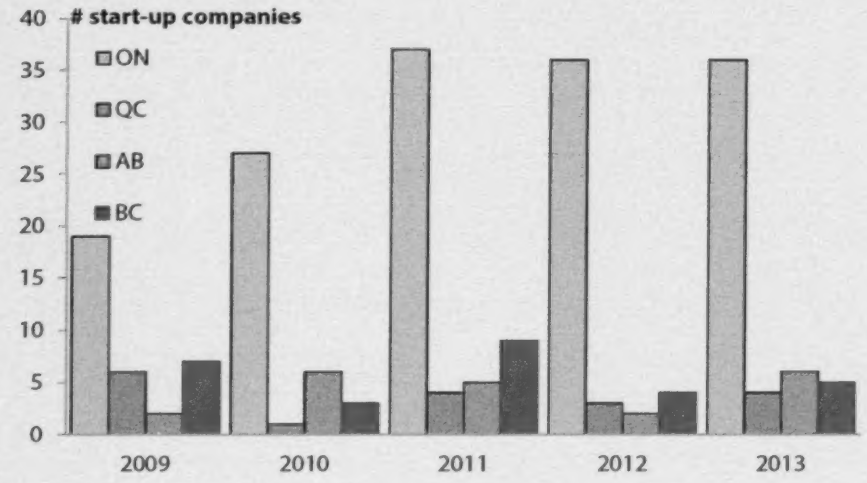
[8] The Association of University Technology Managers' (AUTM) definition for start-up activity relates specifically to a company formed solely around the licensing of technology into a newly formed company. Some new ventures that stem from Canada's institutions are not captured by this definition but are perhaps

component of the technology licensing process. In 2013, Canada's U-15 universities formed 54 new companies based on academic discovery.

In that same year, with five new start-up companies, the University of British Columbia was behind only three other universities. The University of Toronto ranked first, with 12 start-ups, followed by the University of Waterloo, which formed 11 start-up companies.

As shown in figure E-13, at the provincial level, B.C. ranked third in 2013, behind Ontario (36) and Alberta (6).

INDICATOR E-13: UNIVERSITY START-UP COMPANIES FORMED BY SELECTED INSTITUTIONS, TOP FOUR PROVINCES[9]



Data source: Association of University Technology Managers

B.C.'s single U-15 university forms more start-up companies than Quebec's three U-15 universities combined

equally as fundamental to the financial and economic development of the institution as well as the economic region.

[9] Data includes all U-15 universities from each respective high tech province.

3.6. Performance of R&D by the Higher Education Sector

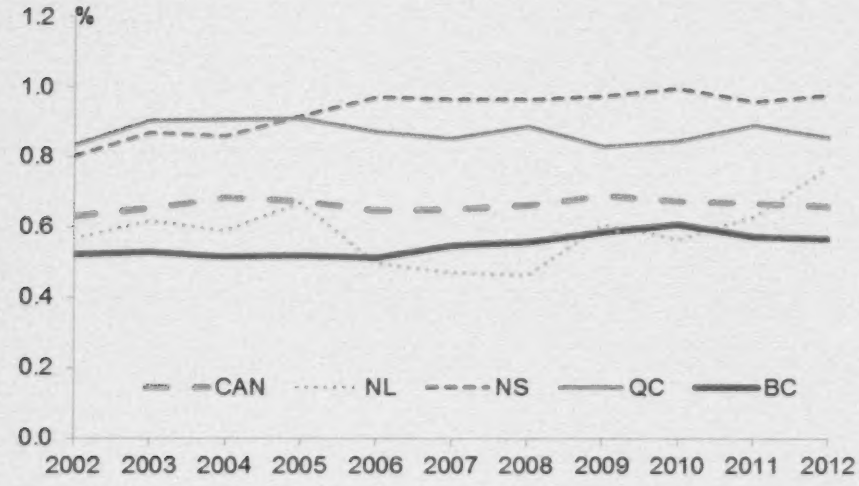
Why is this indicator important?

Research and development at universities contribute to high technology's impact on the economy in two ways. Published academic research is available to the public so that it can be used as a resource. Universities are also increasing partnerships with industry to bring the products and processes of R&D to market (see 'Technology Licensing'). The ratio of R&D performed by the higher education sector (HERD) to gross domestic product (GDP) is an indicator of the proportional investment in R&D by this sector relative to the size of the overall economy. A higher proportion of investment is likely to lead to higher rates of discovery.

In 2012 (the latest year for which data are available), the higher education sector in Canada performed more than $12.1 billion worth of R&D, up from $11.8 billion in 2011. The total in 2012 amounted to 0.7% of Canada's GDP in that year, unchanged over the past decade (0.7% in 2003).

In 2012, among the provinces, the ratio of HERD to provincial GDP was highest in Nova Scotia (1.0%) and lowest in Saskatchewan (0.4%). Quebec held on to its second place rank (0.9%), while B.C.'s ratio sat at just under 0.6% ($1.3 billion), ranking fifth.

INDICATOR E-14: RATIO OF HIGHER EDUCATION PERFORMANCE OF R&D TO GDP



B.C. ranks fifth in ratio of higher education performance of R&D to GDP

Data source: Statistics Canada

3.7. Research Funding

The indicators explained:

Funding for research in high technology industries not only supports current research within the economy, but also plays an integral role in attracting new researchers and encouraging a more innovative landscape. Funding is crucial in order to enhance Canada's reputation as a destination of choice for researchers and to make universities even more competitive in attracting prominent and competent researchers from around the world. Measurements of overall research funding for sectors pertaining to the scientific community and the distribution of the nation's Research Chairs are good indicators of the attractiveness of B.C.'s research environment.

In 2000, the Government of Canada created a new permanent program to establish 2,000 research professorships—Canada Research Chairs (CRC)—in universities across the country. The CRC Program invests $300 million each year to assist universities in recruiting and retaining the most brilliant and promising scientists and researchers, helping these institutions become global leaders in the fields of advanced science and technology. Chair holders aim to achieve research excellence in engineering and the natural sciences, health sciences, humanities and social sciences. The Chairs Program imposes no restrictions on nominees with regard to nationality or country of residence, and as such, many foreign researchers are taking up chairs in Canada, including in British Columbia. The CRC Program offers eligible Canadian degree-granting institutions the opportunity to nominate outstanding researchers for senior professorships in areas that will further the institution's overall research priorities and enable them to maximize their contributions.

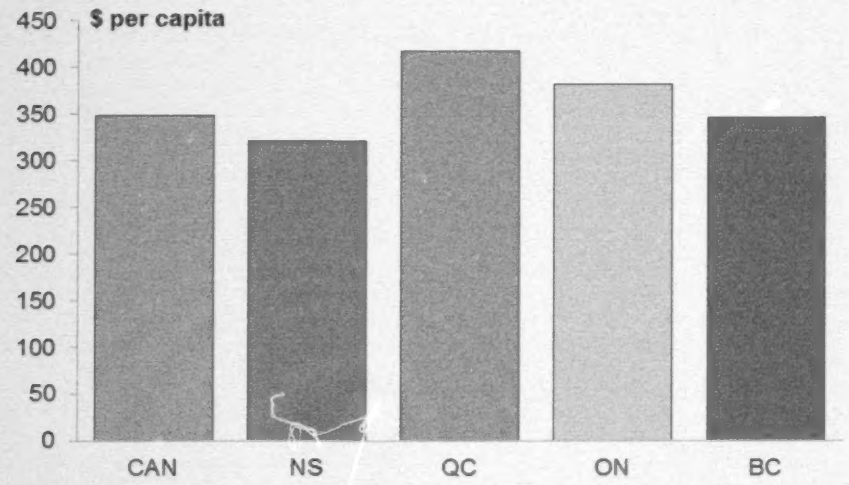
The CRC's Steering Committee includes several organizations that operate separately from the CRC, but which fund research undertaken by chair holders. These organizations are integral to the CRC program. The Canadian Institutes of Health Research (CIHR), the Canadian Foundation for Innovation (CFI), and the Natural Sciences and Engineering Research Council of Canada (NSERC) are among those groups that oversee and contribute to the CRC program.

CIHR is the major federal agency responsible for funding health research in Canada; NSERC is the national instrument for making strategic investments in Canada's capability in science and technology; and CFI is an independent corporation established by the Government of Canada to strengthen national research capability through investments in research infrastructure in Canadian universities, colleges, hospitals and eligible not-for-profit organizations.

Measures of funding for research and skill development in the public and private sectors are direct indicators of the strength and sustainability of a province's research and development status. British Columbia's institutions have consistently received substantial funding from government and arm's length organizations for research conducted at its academic institutions. The province receives above average funding in some research areas, while others leave room for improvement.

Since 2000, up to and including the 2015/16 funding year, the province's researchers have received nearly 5,800 grants and awards from the Canadian Institutes of Health Research (CIHR). Combined, these awards amounted to $1.6 million in funding. On a per capita basis, Quebec ($417) receives the most funding, followed by Ontario ($382). With $346 per capita in funding, B.C. receives substantially more than fourth-ranked Alberta ($284). Grants and awards acquired in British Columbia averaged nearly $280,000 per award, slightly above the national average of just under $277,000. The largest average awards were granted to institutions in Ontario ($298,000), followed by Quebec ($286,000).

INDICATOR E-15: PER CAPITA FUNDING OF CIHR GRANTS AND AWARDS, CUMULATIVE UP TO 2015/16[10]



Data source: Canadian Institute of Health Research

Quebec has the highest per capita funding from CIHR grants and awards

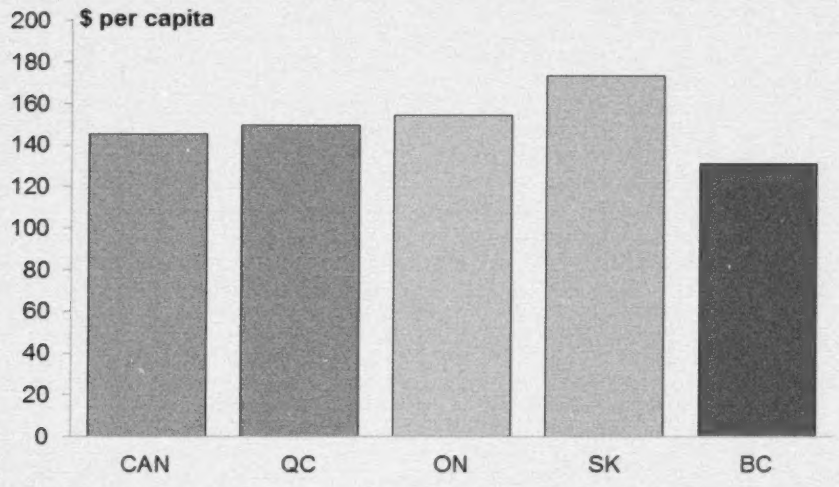
As of 2013/14, the Canadian Foundation for Innovation (CFI) had funded a cumulative 8,835 research projects among Canada's institutes, totalling over $5.1 billion. B.C. was the recipient of funding for 1,095 of these projects, receiving a total of $600 million

[10] Cumulative funding since program inception (2000) up to and including fiscal year 2015/16. Per capita totals are calculated using projected population data as at July 1st, 2015.

(12% of the national funding). The average funding per project was $548,000 in B.C., slightly below the national average ($578,000).

Per capita, B.C. ($131) ranked a solid fourth among the provinces, as illustrated in chart E-16(A).

INDICATOR E-16(A): PER CAPITA CFI FUNDING FOR RESEARCH, CUMULATIVE TO 2013/14[11]



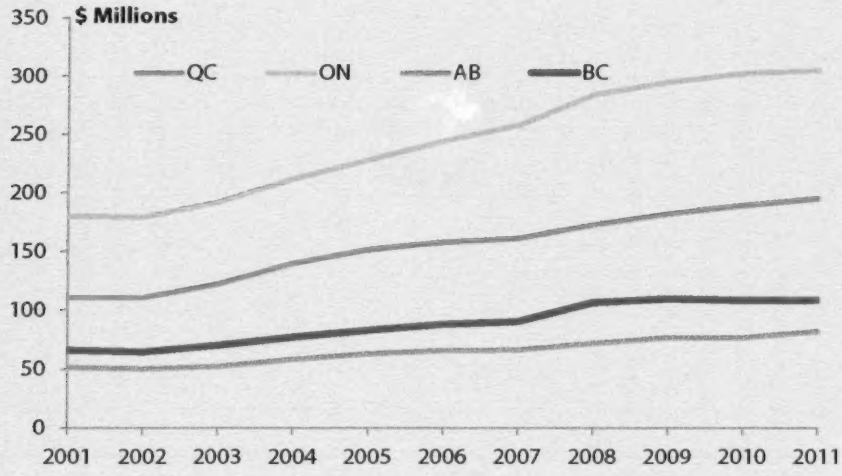
Data source: Canadian Foundation for Innovation

Saskatchewan receives the most CFI funding per capita

In 2010/11 (the latest year for which data are available), the National Sciences and Engineering Research Council of Canada (NSERC) recorded $794 million in expenditures on grants and scholarships among the ten provinces, an increase of 1.5% over the previous year. Funding for most provinces has climbed steadily over the last several years. In 2010/11, Canada's two largest provinces received nearly two thirds of overall funding (a combined 63% or $500 million). In the same year, B.C. was the recipient of more than $109 million (14% of the national total) and $24 per capita in funding from the NSERC (see figure E-17).

[11] Cumulative funding since program onset (1997) up to and including fiscal year 2013/14. Per capita totals are calculated using population data as at July 1st, 2013.

INDICATOR E-17: GROWTH IN NSERC-FUNDED GRANTS AND SCHOLARSHIPS, 2000/2001 TO 2010/2011



Data source: The Natural Sciences and Engineering Research Council of Canada

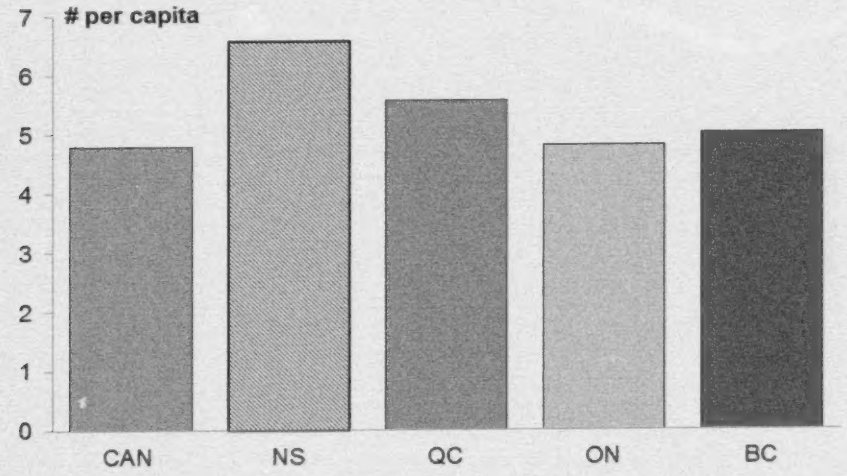
B.C. remains above Alberta in NSERC-funded grants and scholarships

The Canada Research Chairs (CRC) Program and its committees maintain high standards of excellence for appointees and, as such, the ability to fill the Chairs is a direct indicator of the attractiveness of the province's research environment. In 2014, B.C. institutions were home to 232 of the 1,696 research chairs currently in place at Canadian universities. This accounts for 14% of the nation's chairs, more than the combined shares of Atlantic Canada, Saskatchewan and Manitoba.

As illustrated in figure E-18, Nova Scotia (7) had the most chairs per capita in 2014, followed by Quebec (6) and B.C. (5).

Across the country, 13% of CRCs (212) have been recruited from outside Canada. Of the Chairs operating in British Columbia's institutions, 38 (16%) are from outside of Canada. The province is above the national average in the number of female chair holders, with a third (33%) fitting this description. Nationwide, 28% of chair holders are women, with the highest proportion found in P.E.I. (40%).

INDICATOR E-18: CANADIAN RESEARCH CHAIRS PER CAPITA, 2014



Data source: Canada Research Chairs Program

B.C. ranks third among the provinces in number of active research chairs per capita

4. Business Indicators

This set of indicators is concerned with the stimulus to business formation and growth that comes from internal research and development, patenting and venture capital. It also measures results that are in part due to these stimuli, in the form of establishment entries and exits, high growth companies, and the overall growth in the number of businesses.

Compared to other provinces, British Columbia scores above average in venture capital investment and business expenditure on R&D, but is behind in some other business stimulus indicators, such as patents granted.

TABLE 3: QUICK SUMMARY OF INDICATORS FOR THE BUSINESS SECTOR

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
B-1: Patents per 100,000 persons	→	↑	6 of 10
B-2: Patents granted as a % of applications, 3 year average	↑	↑	7 of 10
B-3: Entries to the high tech sector	→	↑	n/a
B-4: Exits from the high tech sector		↓	n/a
B-5: High growth high tech companies	→	↑	n/a
B-6: Venture capital investment, total	n/a	n/a	2 of 10
B-7: Venture capital investment: share of Canadian total	n/a	n/a	2 of 10
B-8: Business expenditure on R&D (BERD) to GDP		↓	3 of 10

4.1. Patents and Applications

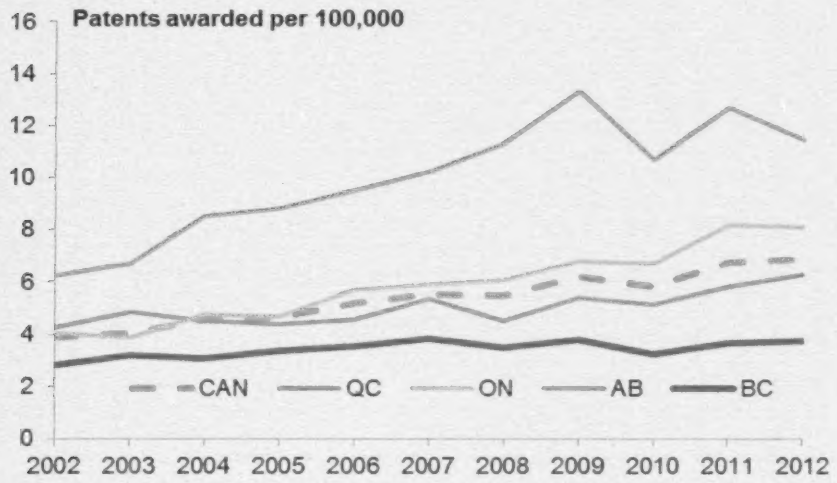
Why are these indicators important?

Patents are an indicator of the intellectual capital of innovation. According to the Canadian Intellectual Property Office, their mandate is to "grant patents which will result in the protection of the inventor and dissemination of technical information, and the encouragement of the creation, adoption, and exploitation of inventions." Patent applications may be rejected for a number of reasons, "including lack of novelty, obviousness, and lack of patentable subject matter." Patents are key resources for researchers, academics and businesses that need to stay shoulder-to-shoulder with developments in their fields.

The application for and granting of patents are indicators of the success of R&D, whether in the public or private sector. Over the past decade, British Columbia has trailed the other provinces in terms of patents awarded per 100,000 persons.

Relative to the other provinces, British Columbia has not been particularly successful in patenting new inventions. B.C. applicants were awarded 170 patents in 2012 (the latest year for which data are available), or 3.7 per 100,000 population. B.C. has ranked fifth or sixth since at least 1998. Despite the lag, patent acceptance has been slowly increasing in B.C. over the past decade, both in actual number and in ratio per 100,000 persons. In 2002, B.C. applicants were awarded just 115 patents (or 2.8 per 100,000 population), considerably fewer than in 2012.

INDICATOR B-1: PATENTS AWARDED PER 100,000 POPULATION



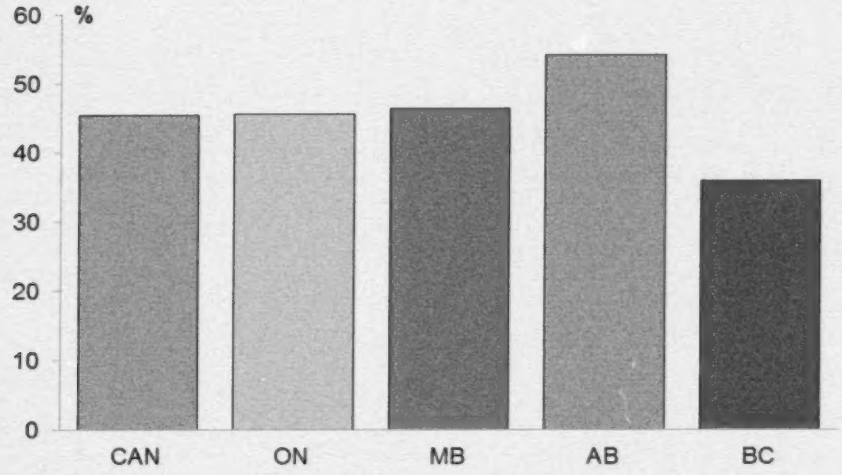
B.C. ranks sixth among the provinces in patents awarded per capita

Data source: Canadian Intellectual Property Office

Chart B-2 demonstrates that in the 2010 to 2012 period, 36% of B.C.'s applications resulted in the issuing of a patent. This is lower than for Canada as a whole (45%).

It should be noted that applications for patents are rejected far more often than they are accepted. The low acceptance rates across the country suggest that applicants generally begin the process of applying for a patent with little knowledge of the procedure(s) or of their chances of success.

INDICATOR B-2: PATENTS GRANTED AS A PERCENT OF PATENT APPLICATIONS (THREE-YEAR AVERAGE, 2010-2012)



Alberta has the highest rate of acceptance for patent applications

Data source: Canadian Intellectual Property Office

4.2. Sector Dynamism: Entries and Exits[12]

Why are these indicators important?

A dynamic sector, characterized by a healthy mixture of large and small, old and new firms, is ideal for generating high levels of innovation. Large, established firms provide employment and earnings stability while small start-ups often provide market responsiveness, creativity and employment growth. The high technology labour force is combined with capital and ideas in the drive to generate new goods and services. A stagnant sector, characterized by several large firms and low levels of entry and exit, is not likely to generate high levels of innovation.

High tech sector entry rates indicate the percentage of firms currently in the sector that are new (i.e., did not exist in the previous year). Similarly, exit rates show how many firms left the high tech sector (or went out of business) as a percentage of the total number of high tech firms.[13] Note that only companies with employees are included in these data.

[12] Note that a comparison with other provinces for indicators B-3, B-4 and B-5 is not possible because of lack of accessibility to the necessary data.

[13] With the release of the 2008 data, Statistics Canada introduced the concept of a statistical "location" replacing statistical "establishment." The location, as a statistical unit, is defined as a producing unit at a single geographic location at which, or from which, economic activity is conducted and for which, at minimum, employment data are available. The change to business location counts was made because they

Innovation is integral to the high tech sector. Along with an innovative spirit comes a somewhat unstable environment for businesses. One consequence of this is a high rate of business failures. On the other hand, small start-up firms in high tech are often at the leading edge of innovation, and are crucial to pushing the sector and its ongoing success.

A good way to measure the strength of a specific sector is to compare it to the overall economy. The number of high technology firms grew at an average annual rate of 16.1% between 2008 and 2013, expanding by over 900 establishments to 9,740. By contrast, the number of firms in the B.C. economy as a whole had a significantly lower average annual growth rate (+11.8%). Over the same period, the exit rate in the province's high tech sector (+14.0%) was also higher than the average business exit rate (+10.7%), suggesting that the innovative atmosphere of high tech businesses in the province tends to lead to volatility. High exit rates are not necessarily a sign of long-term trouble in the high tech sector, as this type of competitive environment is often a marker of high levels of innovation.

Entries into the high technology sector have exceeded exits in four of the last six reporting years, such that the overall number of high technology establishments has been growing steadily. This held true in 2013, as entry rates (21.3%) jumped to eight percentage points higher than exit rates (13.3%). As seen in the following figure, the gap between businesses entering the high tech sector and those leaving is much larger than those for all B.C. establishments and the number of high technology establishments exhibits growth at a rate exceeding that of the economy as a whole.[14]

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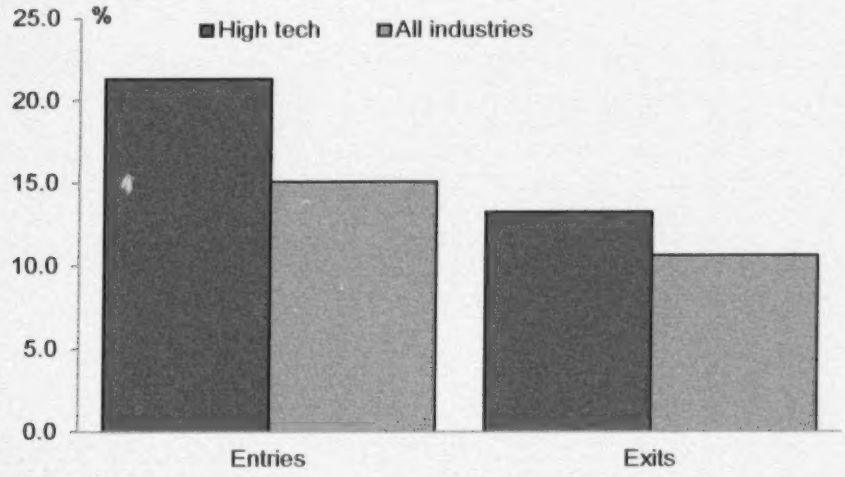
provide a better measurement of actual business units. One consequence of this change is that location data prior to 2007 are not available.

[14] While data by statistical location are not available prior to 2007, data from the old statistical establishment framework indicate that business counts have been growing at a faster rate in the high tech sector.

INDICATORS B-3 AND B-4: ENTRY AND EXIT RATES IN THE HIGH TECH SECTOR COMPARED TO ALL INDUSTRIES, 2013



Entry and exit rates are higher than average in the high tech sector

Data source: BC Stats

4.3. High Growth Companies

The indicator explained:

High levels of growth are strong indicators of the success of a sector. An increasing number of high growth companies will create new jobs, new wealth and new government revenues.

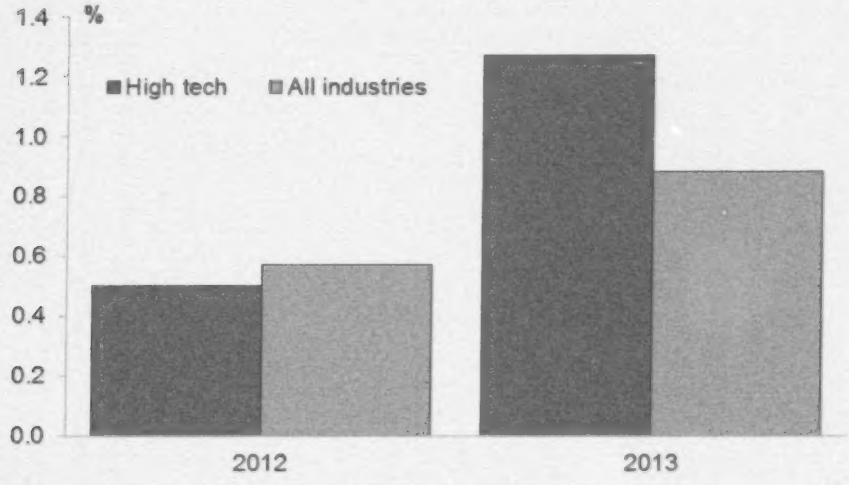
BC Stats defines "high growth companies" as those which increase by at least two employment size categories in one year. For example, a firm that has one to four employees would be considered high growth if it expanded to have 10 to 19 employees over the course of one year. Similarly, a company with 100-149 workers expanding to 200-249 workers would also be considered high growth. There are 21 employment size categories, which provide a considerable amount of detail. However it should be cautioned that, because the exact number of workers in a firm is not known, this measure will be somewhat imprecise. Further, because the last employment category is "5,000 and over," it is impossible for a large corporation to be classified as high growth. These data, then, principally apply to small and medium-sized establishments.

Companies exhibiting elevated levels of growth are indicative of the potential of the high tech sector. Very few companies qualify as high growth, but they can be slightly more common in the high tech sector than elsewhere. The high technology sector is often

thought to be a breeding ground for rapid growth firms—small start-up companies that grow exponentially over short periods of time.

As illustrated in figure B-5, in 2013, about 0.9% of all companies in B.C. showed rapid growth in number of employees, up slightly from the previous year (0.6% in 2012). The share of high growth high technology businesses was higher than that for the economy as a whole (1.3% in 2013), and up substantially from 2012 (0.5%). In actual numbers, there were 1,622 high growth businesses in the overall provincial economy in 2013 and 124 for the high tech sector alone.

INDICATOR B-5: HIGH GROWTH COMPANIES FOR THE HIGH TECH SECTOR AND FOR ALL INDUSTRIES, 2012 AND 2013



Data source: BC Stats

In 2013, the high tech sector has a larger share of companies that are classified as high growth than the economy as a whole

4.4. Venture Capital Investment

Why are these indicators important?

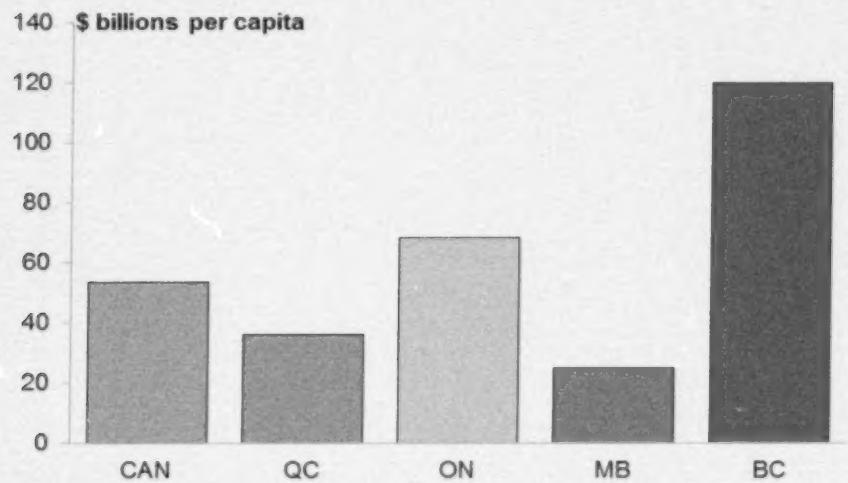
Venture capitalists specialize in investing in high-risk company start-ups or expansions, providing the seed funds for projects that are often involved in the development of new products or processes. They take a portfolio approach, such that, while many high-risk investments may never be commercially viable, those that do succeed are expected to provide high returns to compensate for the total risk capital invested across the portfolio. Thus, venture capital (VC) investment by province gives an indication of both the quality of ventures in a given province and the investors' assessment of the business climate. It also reflects the risk tolerance of investors in different regions and over time.

It should be noted that the data-set used for this report includes investment from all sources and, as such, does not distinguish between foreign and domestic investment.

In 2014 (the only year for which reliable data is currently available), Canada's venture capital investment reached a pre-recession level of $1.9 billion. In the same year, B.C. attracted $554 million in investment income. This compares to $295 million in Quebec and $52 million in Alberta. Ontario ($932 million) was the only province to surpass B.C. in 2014.

Given the province's strong performance, its investment per capita far exceeded any other province in 2014. The province boasted an average venture capital investment of over $120 per 100,000 persons, nearly double that of Ontario ($68) and considerably higher than the national average ($54).[15]

INDICATOR B-6: CANADIAN VENTURE CAPITAL INVESTMENT BY PROVINCE OF INVESTMENT, 2014 ($ BILLION)



B.C. ranks number one in the country in venture capital investment per capita

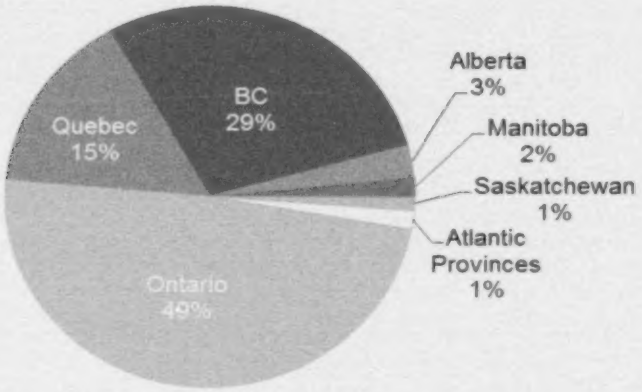
Data source: Canadian Venture Capital Association

In 2014, B.C. held an impressive 29% share of the country's venture capital investment, a far greater portion than in any other province outside Canada's industrial core. The share of investment in B.C. far exceeded that of Alberta, Saskatchewan, Manitoba, Quebec and Atlantic Canada combined. Ontario (49%) retained the largest share of the country's venture capital investment (See Figure B-7).

[15] Most of the other potential financing indicators, such as debt financing, are either available only for Canada with no provincial breakdown, or do not provide sufficient years of reporting to establish trends and are therefore not included in this report.

INDICATOR B-7: SHARE OF CANADIAN VENTURE CAPITAL INVESTMENT, 2014

B.C. boasts nearly a third of Canadian venture capital investment



Data source: Canadian Venture Capital Association

Performance of R&D by the Business Sector

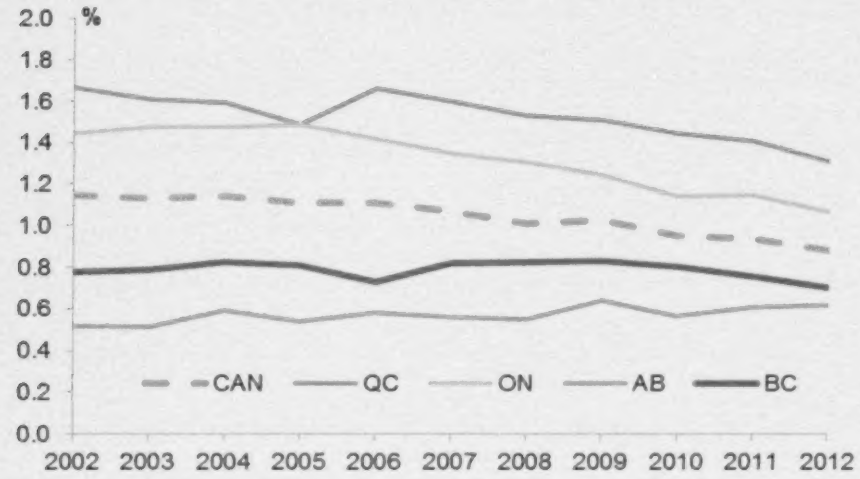
Why is this indicator important?

Research and development (R&D) provides the potential for innovation and new discoveries in the form of new products, services or processes that eventually enhance productivity. In this way, R&D is viewed as an investment in future production of the economy. The ratio of R&D performed by business (BERD) to GDP is an indicator of the proportional investment in R&D by the business sector relative to the size of the overall economy. It is assumed that a higher proportion is likely to lead to higher rates of discovery and increased commercialization activity.

Canada's business sector performed $16.2 billion worth of R&D in 2012 (the latest year for which data are available), amounting to just under one percent of the nation's GDP in that year. As seen in figure B-8, the ratio of BERD to provincial GDP has been much higher in Quebec and Ontario than in the rest of the country. In 2012, although higher than several provinces in performed R&D to provincial GDP, B.C. (0.7%) was exceeded by Ontario (1.1%) and Quebec (1.3%). The ratios of BERD to GDP in B.C. and Alberta used to be quite comparable; however, since the end of the last decade, B.C.'s rates have been higher.

In 2012, Ontario and Quebec made up a combined 74% of BERD in Canada, while B.C.'s share was 10%. At the same time, 12% was attributable to Alberta.

INDICATOR B-8: RATIO OF BUSINESS PERFORMANCE OF R&D TO GDP



Data source: Statistics Canada

Quebec's ratio of business performance of R&D to GDP remains well above that of the other provinces

5. Government Indicators

The government sector impacts the high technology environment by funding and directly performing R&D, and by providing a regulatory, tax and infrastructure environment for the private sector to operate within.

In general, the tax regime varies substantially across provinces. For example, Alberta has a considerably lower corporate income tax rate than other provinces, while Manitoba has no small business tax.

This section also includes a summary of gross expenditures on R&D (GERD) in British Columbia. This consists of R&D performed by business and higher education in addition to federal and provincial governments. Generally, direct performance of R&D by government has lagged in B.C. compared to other provinces.

TABLE 4: QUICK SUMMARY OF INDICATORS FOR THE GOVERNMENT SECTOR

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
G-1: Personal tax index individual with $80,000 income	↓	↑	1 of 10
G-2: Small business tax rate			3 of 10
G-3: Corporate income tax rate	→	→	2 of 10
G-4: Government expenditure on R&D (GOVERD) to GDP	↓		10 of 10
G-5: Gross expenditure on R&D (GERD) to GDP	→	↓	3 of 10

5.1. Tax Rates: Individual and Corporate

Why are these indicators important?

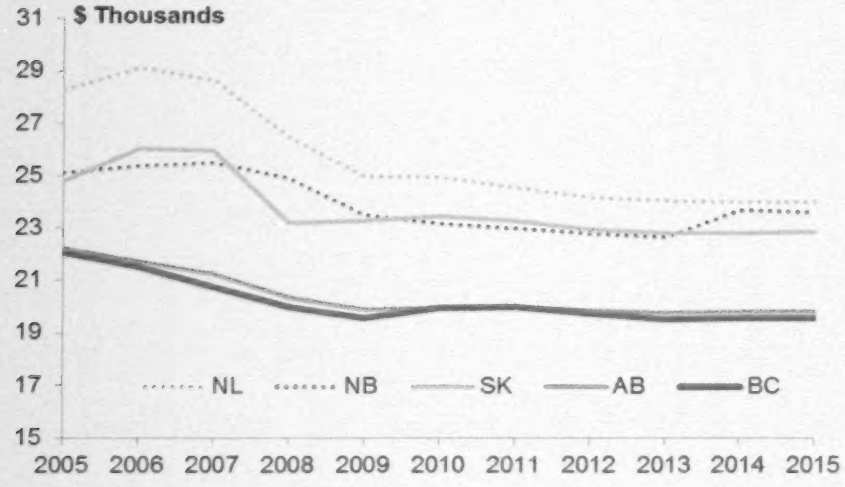
High technology companies are highly mobile because much of the input to their production is derived from human capital. As a result, high technology companies are often free to seek an ideal location to establish operations. Lower levels of taxation are thought to attract investment and encourage a skilled labour pool. On the other hand, desirable amenities that may play an equal role in attracting skilled workers, such as quality of life, social programs, environmental standards and regulated working conditions may result in higher levels of taxation.

One policy area over which the government has complete control is tax rates. Lower levels of taxation are thought to attract investment and a skilled workforce—both essential to the high technology sector. However, a better quality of life associated with regulation of working conditions, environmental standards and universal social programs

are also appealing to high technology workers. Such amenities tend to result in higher levels of taxation.

The level of taxation in B.C. for high-income individuals has declined over the past decade, decreasing in seven of the last ten reporting years. The province has consistently boasted the lowest rate in the country, with the exception of 2010, when Alberta's rate inched below that of British Columbia. In 2015, the total taxes levied to unattached individuals in B.C. earning $80,000 annually averages $19,569 (or 25%), the lowest level in the nation, slightly below Alberta ($19,797). B.C.'s rate is relatively unchanged from 2014, but reflects a considerable decline since 2005, when taxes amounted to $22,063 (28%). The long-term decrease in personal taxes on high-income earners has also been seen in most other provinces. In 2015, average taxes paid by high-income earners in B.C. remain well below those in Quebec ($31,309).

INDICATOR G-1: AVERAGE OF ALL TAXES PAID BY UNATTACHED INDIVIDUALS EARNING $80,000 PER YEAR ($ '000)

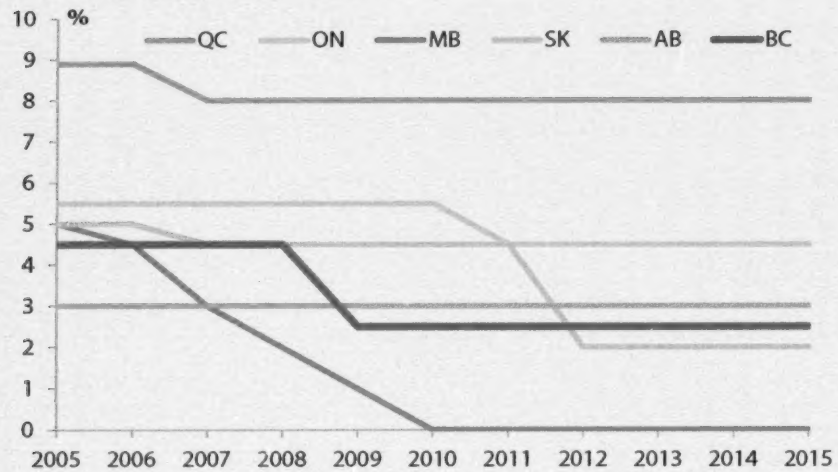


Data source: B.C. Ministry of Finance

Over the past decade, B.C. and Alberta have had nearly identical taxation levels for high-income earners

British Columbia's small business tax rate paints a similar picture to that of high income individuals. In 2000 and 2001, B.C. boasted the lowest small business tax rate in the country. In the years that followed, some of the Atlantic provinces dropped rates substantially, as did Alberta and Manitoba. In 2015, the rate in B.C. (2.5%) remained among the lowest in the country, resting just below that of Alberta (3.0%) and just above that of Saskatchewan (2.0%). As seen in figure G-2, Quebec's tax rate has hovered around eight or nine percent (8.0% in 2015) for the past decade, while Manitoba has succeeded in eliminating the small business tax altogether.

INDICATOR G-2: SMALL BUSINESS TAX RATE

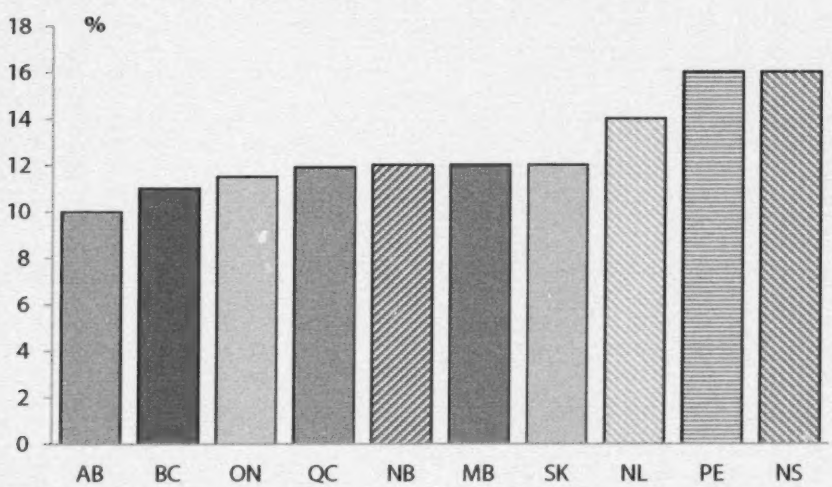


Data source: B.C. Ministry of Finance

B.C.'s small business tax rate is among the lowest in the country

British Columbia's general corporate income tax rate is also lower than in most other provinces. In 2015, Alberta's corporate tax rate (10.0%) was the lowest among the provinces for the eighth consecutive year. From 2011 to 2013 B.C. also had the lowest rate (tied with Alberta and New Brunswick) but, in 2014, it raised its rate from 10.0% to 11.0%. In 2015, B.C.'s rate remains unchanged (11.0%), but is still considerably lower than rates in most other provinces (see chart below).

INDICATOR G-3: GENERAL CORPORATE INCOME TAX RATE IN 2015



Data source: B.C. Ministry of Finance

Alberta has the lowest corporate tax rate in Canada

5.2. Performance of R&D by the Government Sector

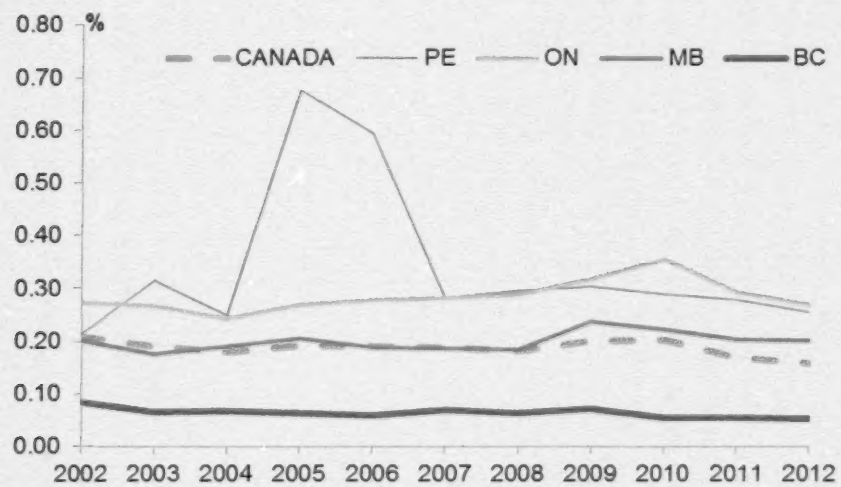
Why is this indicator important?

Government tends to fund much more R&D than it actually performs. However, in some fields, governments do maintain research personnel in order to provide independent testing of products, processes and practices. The purpose of most internal government research is not necessarily focused on innovation, but serves a review function. Significant innovations developed by government researchers are often spun-off to the private sector. The ratio of government R&D to GDP is an indicator of the proportional investment in R&D by the government sector relative to the size of the overall economy.

The combined federal and provincial government sector in Canada performed $2.9 billion worth of R&D in 2012 (the latest year for which data is available), down slightly from 2011 ($3.0 billion). This marked the third straight year of declines and accounted for 0.16% of Canada's GDP in that year.

Among the provinces, Ontario and P.E.I. have historically maintained the highest ratios of government R&D to GDP. With a ratio of 0.27% in 2012, Ontario held its first-rank position, and P.E.I. (0.25%) remained second for the fourth consecutive year. B.C. has consistently ranked last compared to all Canadian provinces. In 2012, B.C.'s ratio remained unchanged at 0.05%.

INDICATOR G-4: RATIO OF COMBINED FEDERAL AND PROVINCIAL PERFORMANCE OF R&D TO GDP



Data source: Statistics Canada

Ontario and P.E.I. have historically had the highest ratio of government R&D to GDP

5.3. Gross Expenditure on R&D

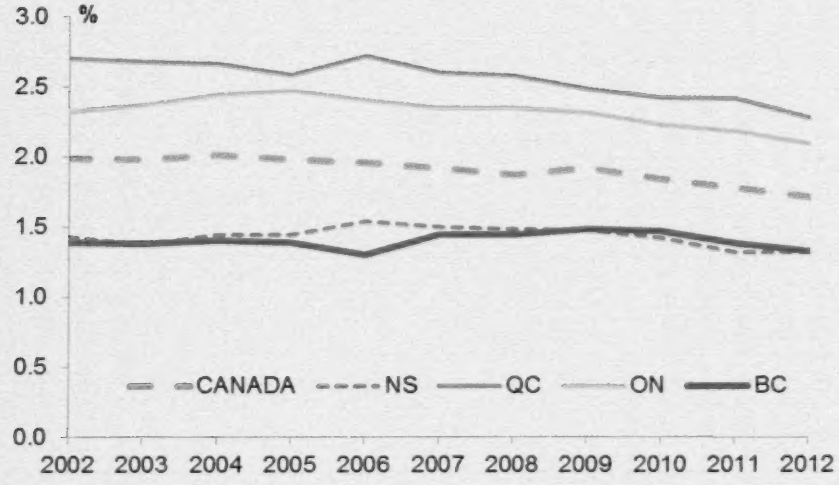
Why is this indicator important?

The overall ratio of total R&D effort to the overall economy, also known as the GERD ratio, is a measure of how much a jurisdiction is willing to sacrifice current consumption for potential increased future capacity. The changing structure of the ratio (the relative size of the component investments by the government, business and higher education sectors) over time is a measure of the shifting importance different sectors place on the performance of R&D.

Nationally, gross expenditure on research and development (GERD) remained above the $31.3 billion mark in 2012 (the latest year for which data are available), relatively unchanged from the previous year. This amounted to 1.7% of Canada's GDP in that year, the lowest ratio of the past decade. Since 2002, the Canadian GERD to GDP ratio has ranged from a low of 1.7% to a peak of 2.0%.

As figure G-5 illustrates, the GERD to GDP ratios for B.C. have been comparatively level over the last ten reporting years. In 2012, its rate was 1.3%, affording it a third-place ranking among the provinces, below only Ontario (2.1%) and Quebec (2.3%).

INDICATOR G-5: RATIO OF TOTAL EXPENDITURE ON R&D TO GDP



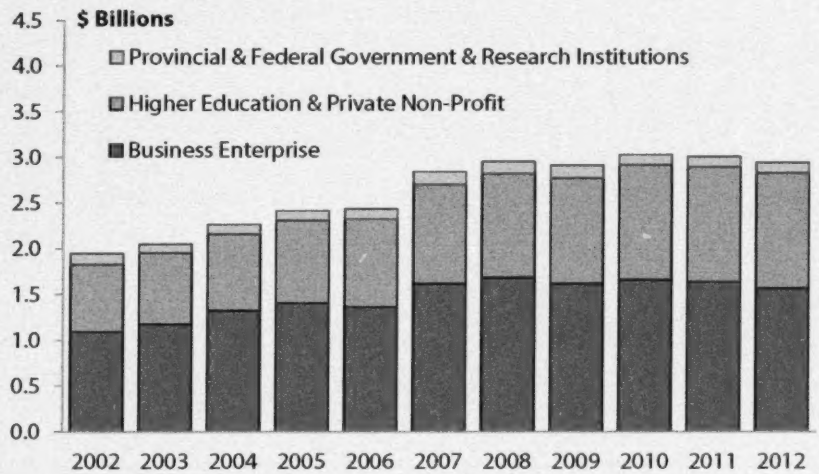
Data source: Statistics Canada

B.C.'s ratio of total expenditure on R&D to GDP has remained relatively unchanged in recent years

The business sector in B.C. executed the bulk of R&D (53%) in 2012. Higher education made up 43%, while the rest (4%) was performed by the federal and provincial governments. This is also a common trend among other provinces. The

amount of R&D performed by government in B.C. has held relatively steady over the past decade, while R&D in business and higher education has been increasing.

SHARE OF R&D PERFORMANCE IN B.C., BY SECTOR



Data source: Statistics Canada

The business sector is consistently the leading performer of R&D in B.C.

6. External Indicators

Along with the nation as a whole, British Columbia benefits from a large number of well-trained and educated immigrants. Also of interest, but more difficult to monitor, is the skill-set of immigrants and the type of occupations they enter. Migration to B.C. from other Canadian provinces is also a rich source of educated and trained workers

British Columbia's economy is highly dependent on trade with other provinces and foreign countries, both as a source of goods and services used in the province and as markets for its products and services. Trade relationships play an integral role in the high tech sector, as they do in the economy as a whole. Since imported components are often used to produce high tech products, imports of high technology goods can be an indicator of future production. B.C.'s high tech imports have been volatile over the past decade and are impacted by currency exchange rates and the health of the overall economic climate. For example, in 2009, in the midst of the global economic slowdown, imports recorded the largest decline of the decade.

TABLE 5: QUICK SUMMARY OF INDICATORS FOR THE EXTERNAL SECTOR

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
X-1: Percentage of immigrants with 16+ years of education	→	↑	8 of 10
X-2: Median years of schooling of immigrants	→	↓	7 of 10
X-3: Net inter-provincial migration	↓	↑	2 of 10
X-4: High technology imports	↑	↑	n/a

6.1. Educational Background of Immigrants

Why are these indicators important?

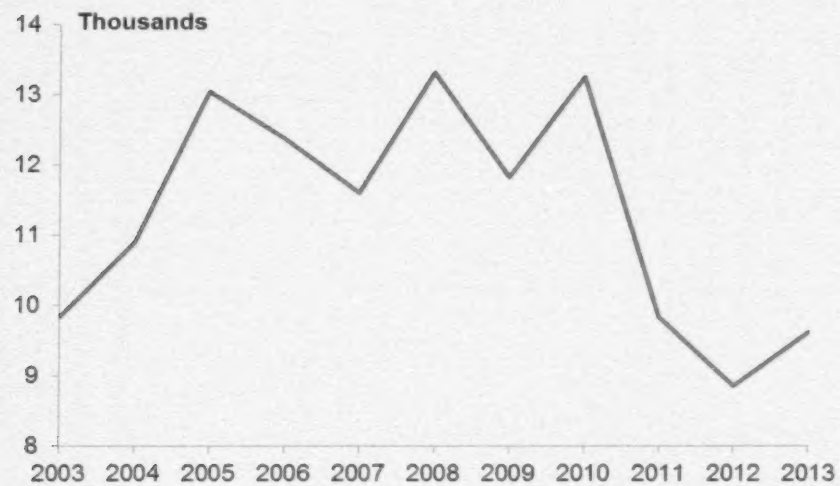
The economic effects of immigration depend on the skills and resources immigrants bring with them. Two specific indicators of the educational attainment of immigrants are the percentage of immigrants aged 25 years and older with 16 or more years of education (sufficient levels to obtain a university degree in Canada) and the median years of education of immigrants aged 25 years and older at landing. An influx of highly educated immigrants increases the supply of skilled labour and can provide a significant boost to high technology companies. Immigrants also offset the loss of skilled workers who move to other provinces or out of Canada.

British Columbia has historically experienced high levels of immigration and the trend has continued over the past decade, through to 2013.[16] As in other parts of the country, immigrants to the province tend to be well educated.

The number of skilled immigrants (with 16 or more years of education) landing in B.C. has declined slightly (-2.3%) over the last decade. In 2003, B.C. recorded 9,838 landings, compared to 9,608 landings in 2013. Ontario also reported a decline (-20.0%) of skilled immigrant landings over the same period, falling from 33,934 in 2003 to 27,134 in 2013. On the other hand, the migration of highly educated immigrants to smaller provinces such as P.E.I., New Brunswick, Saskatchewan and Manitoba has surged over the last decade. For example, the number of skilled immigrants landing in P.E.I. climbed from 37 in 2003 to 231 in 2013, an increase of 524.3%. Similarly, in Saskatchewan, landings went from 398 in 2003 to 2,627 in 2013, a jump of 560.1%. Nationally, the number of highly educated immigrants has climbed by 4,457 (+7.0%).

Despite the overall decline, B.C. has certainly been a central destination for skilled immigrants. From 2003 to 2013, the province received a cumulative 124,450 immigrants with 16 or more years of education—more than any other province except for the more populous Quebec and Ontario. Geography undoubtedly plays a role in B.C.'s success in attracting these foreign residents. Asia has become the top continent of origin for immigrants to Canada and B.C.'s relative proximity to Asia and the Pacific Ocean compared to the rest of Canada makes it a prime destination.

INDICATOR X-1: ADULT IMMIGRANTS TO B.C. WITH 16 OR MORE YEARS OF SCHOOLING AT TIME OF LANDING



Data source: Citizenship and Immigration Canada

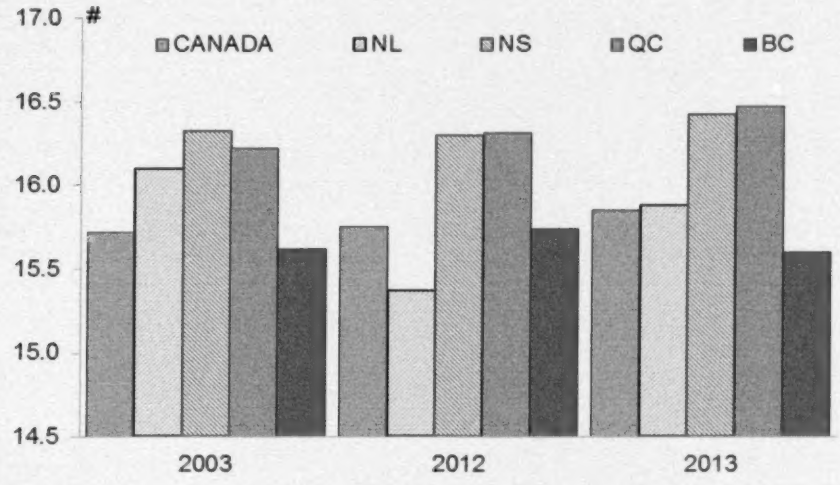
The number of immigrants to B.C. with 16 or more years of schooling has decreased recently

[16] For detailed immigration data, see the BC Stats website: http://www.bcstats.gov.bc.ca.

As in other parts of the country, immigrants to the province tend to be well educated. In fact, in 2013, the median education level of adult immigrants (aged 25 years and older at landing) to B.C. was 15.6 years of schooling. This was lower than that of top-ranking Quebec (16.5), but relatively on par with the national average (15.9).

The median years of schooling of immigrants aged 25 years and older has increased notably since the 1990s, but appears to have reached a plateau in recent years. Between 2003 and 2013, median education remained unchanged in British Columbia. Other provinces have seen a similar trend: the Canadian median inched up from 15.7 years of education to 15.9 years over the same period (see figure X-2).

INDICATOR X-2: MEDIAN YEARS OF SCHOOLING AMONG IMMIGRANTS AGED 25 YEARS AND OLDER



Data source: Citizenship and Immigration Canada

Immigrants to Quebec have the highest median number of years of schooling

6.2. Inter-provincial Migration

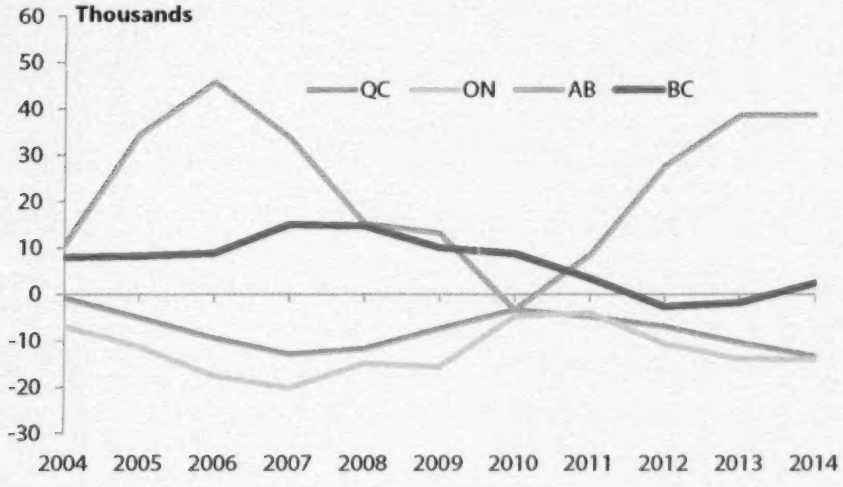
Why is this indicator important?

Canadian workers are much freer to move within the borders of the country than they are internationally. In aggregate, population movement between provinces is a general indicator of perceived economic opportunity and general attractiveness. Individuals and families often relocate for economic reasons. In this way, this indicator points to the overall perception of the strength of provincial economies and the labour pool from which employers can draw.

The pattern of inter-provincial migration in Canada is substantially dictated by people seeking better economic opportunities. It used to be the case that the migration patterns of B.C. and Alberta mirrored each other. However, in recent years, net migration levels for B.C. and Ontario have shown a stronger correlation. In 2003, out-migration from B.C. began to ease and, in 2011, the province marked the eighth consecutive year of net inter-provincial gains. However, this trend came to a halt in 2012, when the province saw a net loss to other provinces. Out-migration continued in 2013, but in 2014, the province bucked the national trend, with a net gain of nearly 2,300.[17] In fact, Alberta and Saskatchewan were the only other provinces to receive a net influx of residents from other parts of the country.

Between 2004 and 2014, Alberta and B.C. were the only two provinces to experience an annual net in-migration. Alberta saw an annual average of nearly 24,000 people over the ten-year period, while B.C. gained an average of almost 6,800 residents from other provinces per year. On the other side of the country, Ontario experienced an average annual net out-migration to other provinces of about 12,100 people.

INDICATOR X-3: NET INTER-PROVINCIAL MIGRATION



Inter-provincial migration to Alberta soars above the other provinces in recent years

Data source: Statistics Canada

[17] Dates for this indicator are in Census years, such that '2014' refers to the July 1st, 2031 to June 30th, 2014 period.

6.3. High Technology Imports

Why is this indicator important?

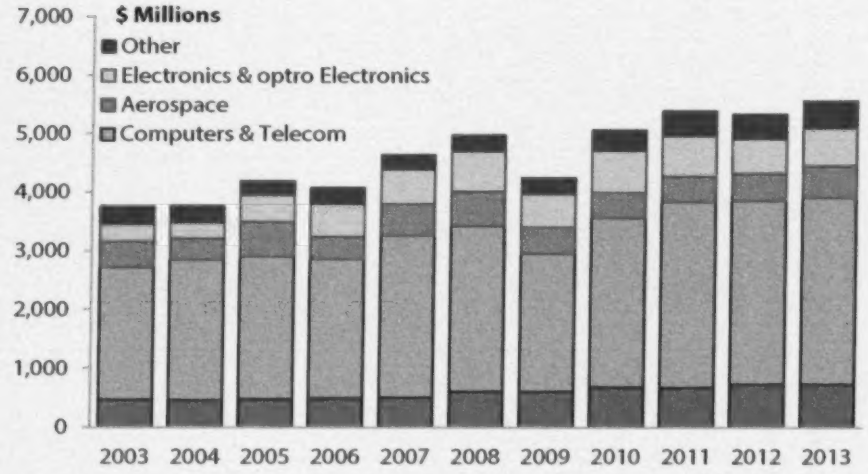
Although a heavy reliance on imports can create a negative trade balance (the difference between the value of goods exported and the value imported), imports of high technology goods are often essential to supply domestic supply chains that turn imports into future exports. For instance, without state-of-the-art telecommunications, the high technology sector as a whole would struggle. Similarly, purchases of computer integrated manufacturing technology would displace future imports of other goods, whether high technology or low technology, and could generate goods for export. More importantly, high technology imports are a key driver in productivity growth and enhancing competitiveness. Although some tech imports are consumer goods, such as smart phones, laptops, etc. for personal/household use, a significant portion is comprised of goods and services utilized by businesses operating in the high tech sector.

B.C.'s high technology sector relies on imports of high technology goods in order to thrive.[18] B.C. imports of high technology products were valued at $5.6 billion in 2013 (the most recent year for which data are available). As seen in the following chart, computers and telecommunications are the main component (57%) of high technology imports. Life Sciences (13%) and aerospace (10%) also make up notable shares. Imports of electronics have generally been expanding since 2004 and in 2013 comprised 7% of overall high tech imports.[19]

[18] Note that imports have not been adjusted for inflation or exchange rate effects.

[19] For a description of what these commodity groups contain, see Appendix B of the *Profile of the British Columbia High Technology Sector.*

INDICATOR X-4: VALUE OF HIGH TECHNOLOGY IMPORTS TO B.C. ($ MILLION)



Computers and telecommunications make up most of high technology imports to B.C.

Data source: BC Stats

7. Labour Indicators

Most of the indicators in this report are grouped according to the sector that provides or affects the input. However, in the case of labour input, indicators such as unemployment rates are not attributable to a single source sector. This section contains a set of indicators that are specific to the labour market but also represent a combined impact of the source sectors.

Nation-wide rates of unemployment among workers in the natural and applied sciences are consistently well under those for the economy as a whole. In general, unemployment rates have been falling quite consistently over the past ten reporting years. The past decade has witnessed both the highs and lows of unemployment rates in B.C., from the labour shortage crisis of 2006-2008 to the onset of the economic slowdown that began in late 2008.

TABLE 6: QUICK SUMMARY OF INDICATORS FOR LABOUR

INDICATORS	Trend		Ranking
	Long-Term	Latest Year	Overall
L-1: Unemployment rate for natural and applied sciences	→	↓	4 of 10
L-2: Research personnel per 100,000 population	↑	↓	3 of 10
L-3: Quality of life, Vancouver∞	↓	→	5 of 221
L-4: Cost of living×		↑	10 of 11

∞ The ranking compares Vancouver to 221 cities worldwide.
× The ranking compares Vancouver to ten other Canadian cities.

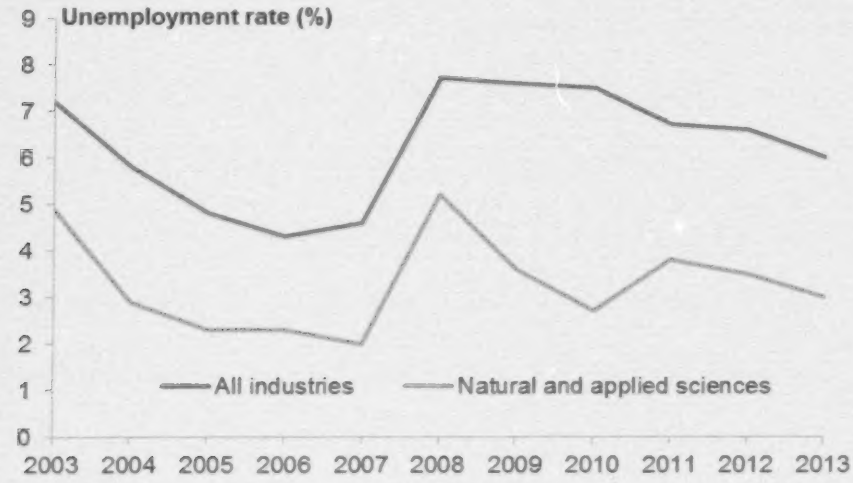
7.1. Unemployment Rate in Natural and Applied Sciences

Why is this indicator important?

A low level of unemployment in natural and applied sciences occupations is desirable because some components of this group (e.g., computer scientists) are the engines of innovation in the high technology economy. Higher levels of unemployment in this group indicate idle intellectual capital, which has the effect of slowing the overall rate of innovation. Also, a lower ratio between the unemployment rate for natural and applied sciences occupations and the overall labour force indicates heightened demand for these specializations. This should attract high tech workers from other jurisdictions as well as more students into these areas.

Between 2004 and 2014, British Columbia's highest annual rate of unemployment for all occupations occurred in 2009, at 7.9%. Over the same period, the highest recorded overall unemployment rate for the nation as a whole was 8.3%, also in 2009. In contrast, the peak rate of unemployment for natural and applied sciences in B.C. was 5.2% and 4.6% for Canada of that same year. Clearly, over the past decade, individuals employed in natural and applied science occupations have enjoyed an employment advantage compared to the labour force as a whole.

INDICATOR L-1: B.C. UNEMPLOYMENT RATE FOR NATURAL AND APPLIED SCIENCE OCCUPATIONS (%)

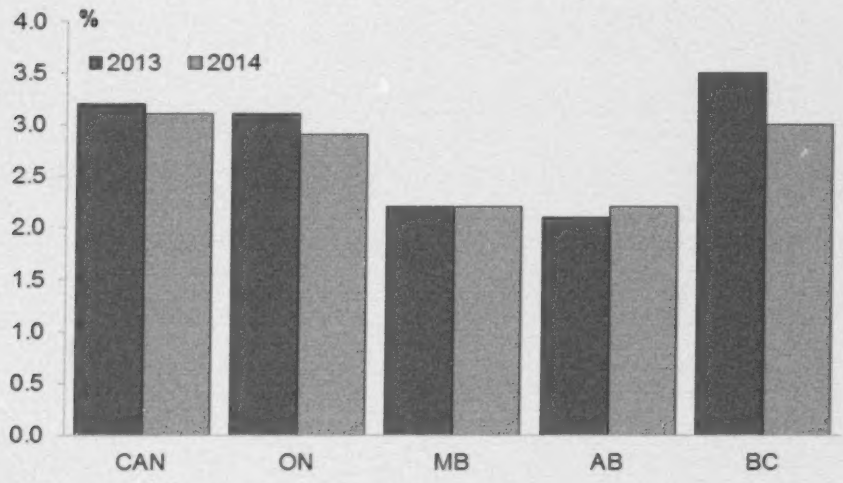


Data source: Statistics Canada

The jobless rates for natural and applied sciences declined in 2014

In 2014, the unemployment rate for natural and applied sciences in B.C. was 3.0%, slightly below the national average for the same year (3.1%). This was down from 3.5% in 2013. Alberta and Manitoba had the lowest rates in the country (both 2.2%) in 2014, while P.E.I and Newfoundland and Labrador (6.7% and 5.2%, respectively) saw the highest rates.

UNEMPLOYMENT RATE FOR NATURAL AND APPLIED SCIENCES, 2013 AND 2014 (%)



In 2013 and 2014, unemployment rates for natural and applied sciences were lowest in Alberta and Manitoba

Data source: Statistics Canada

7.2. Research Personnel

Why is this indicator important?

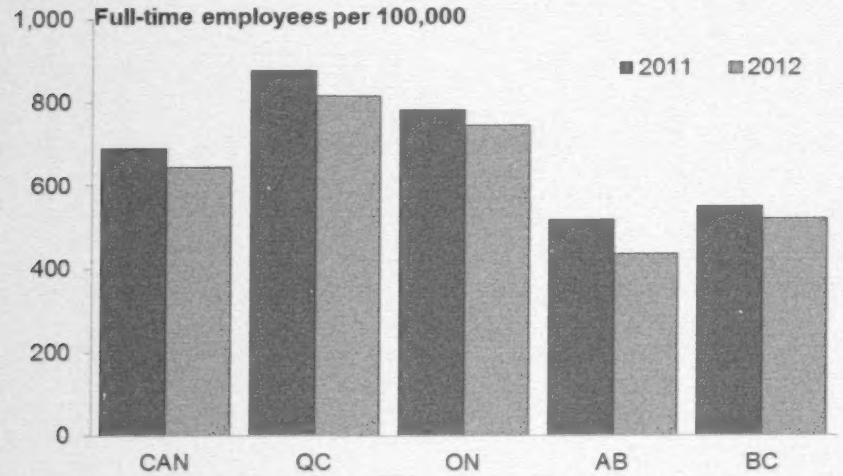
The absolute number of researchers and technicians engaged in research is an important determinant of the volume of scientific and technical discoveries that may result in patent applications, and later, in the birth of new firms or the growth of existing firms. The structure of the research workforce is also important in terms of the employment sector, whether federal government, provincial government, business enterprise or higher education. Each sector has different reasons for developing new technology and different methods of bringing new discoveries to market.

In 2012 (the latest year for which data are available), there were approximately 223,930 persons working in the areas of government, business and higher education across the country, a ratio of 644 researchers per 100,000 persons.

Over the past decade, B.C. has been below the Canadian average in terms of researchers per 100,000 persons. However, as seen in figure L-2, the province has maintained a rank of third among the provinces, behind only Ontario and Quebec. In 2012, British Columbia was home to 23,580 researchers (a 4.3% decrease from 2011), or a per capita research force of 519 per 100,000 persons. In the same year, Alberta's research force took a substantial hit (-13.8%), pushing its per capita rate down to 435. P.E.I. (+9.6%) was the only province to see a boost in research personnel between 2011 and 2012.

Meanwhile, Ontario (745) and Quebec (816) continued to have by far the largest research workforce per 100,000; however, the total number of researchers in these provinces also decreased in 2012.

INDICATOR L-2: TOTAL RESEARCH WORKFORCE PER 100,000 PERSONS, 2011 AND 2012



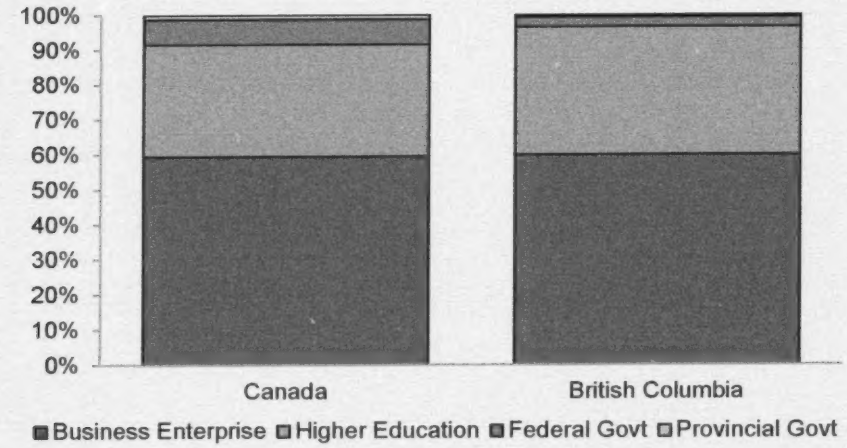
Data source: Statistics Canada

The provinces with the largest research workforce all saw a decline in personnel in 2012

As in previous years, business and higher education claimed the largest shares of Canadian research personnel (59% and 32%, respectively) in 2012. Business accounted for the largest proportion of the research workforce in most provinces. The proportions ranged from just 31% of personnel in Newfoundland and Labrador to nearly two thirds (65%) in Quebec. Around 60% of B.C's research personnel were from the business sector.

P.E.I and Manitoba have a much larger portion of federal research personnel (each 16%) than most provinces. Not surprisingly, due to the concentration of federal agencies in the National Capital Region (Ottawa), Ontario's rate is also somewhat elevated. Saskatchewan's provincial government research workforce (6%) is six times that of the Canadian average (1%). The following chart shows that the share of researchers in the higher education sector in B.C. (37%) continues to be above that of Canada as a whole (32%), but is much lower than for Newfoundland and Labrador (61%) and Nova Scotia (58%).

STRUCTURE OF THE RESEARCH WORKFORCE BY SECTOR IN 2012



The bulk of B.C.'s research workforce is found in the business sector

Data source: Statistics Canada

7.3. Quality of Life

The indicator explained

Mercer Human Resource Consulting developed "quality of life" scales to assist companies in determining hardship pay. Such allowances are often provided when a company sends employees to work in foreign countries. The Mercer quality of life survey provides rankings based on 39 indicators, grouped into ten categories:

- ***Political and social environment***
- ***Economic environment***
- ***Socio-cultural environment***
- ***Medical and health considerations***
- ***Schools and education***
- ***Public services and transportation***
- ***Recreation***
- ***Consumer goods***
- ***Housing***
- ***Natural environment***

British Columbia's largest city is consistently ranked as having the highest overall quality of life in North America and among the highest in the world. Granted, B.C. is made up of many diverse regions, cities and towns, but since Vancouver is the most populous metropolitan area in the province, its high ranking reflects on the province as a whole.[20] Also, most of the quality of life variables are at equally high levels in other parts of the province. The positive ranking for Vancouver holds great potential to provide a substantial competitive advantage in attracting high tech workers.

INDICATOR L-3: QUALITY OF LIFE INDEX RANKING, 2015

	Global Rank	Americas Rank
Vancouver	**5**	**1**
Toronto	15	2
Ottawa	16	3
Montreal	24	4
San Francisco	27	5
Calgary	33	6
Boston	34	7
Honolulu	36	8
Chicago	43	9
Seattle	44	10
New York City	44	10

Data source: Mercer Human Resource Consulting

Vancouver ranks first in the Americas on the quality of life scale

[20] The Mercer Human Resource quality of life scales give rankings only to large target urban centres. However, an urban centre's ranking can be quite representative of its surrounding regions.

In 2015, Vancouver's score on the overall quality of life index remains well above cities in the other provinces included in the study. On a global scale, Vancouver ranks fifth among 221 cities, far higher than Ottawa (16th), Toronto (15th), Montreal (24th), and Calgary (33rd). Key American cities with which B.C. competes for high tech workers and firms (particularly Seattle and San Francisco) also rank lower than Vancouver.

7.4. Cost of Living

The indicator explained:

The inter-city price index compares the cost of consumer goods and services in different parts of the country. The "all items" price index is based on a bundle of goods and services that represents the expenditure patterns of a hypothetical average Canadian household. The largest component of the all items index is shelter. This includes the cost of owned or rented housing and related expenses (insurance, electricity, fuel oil, etc.). Prices recorded are the full consumer price, including sales and excise taxes, and are based on a combined city average (100).

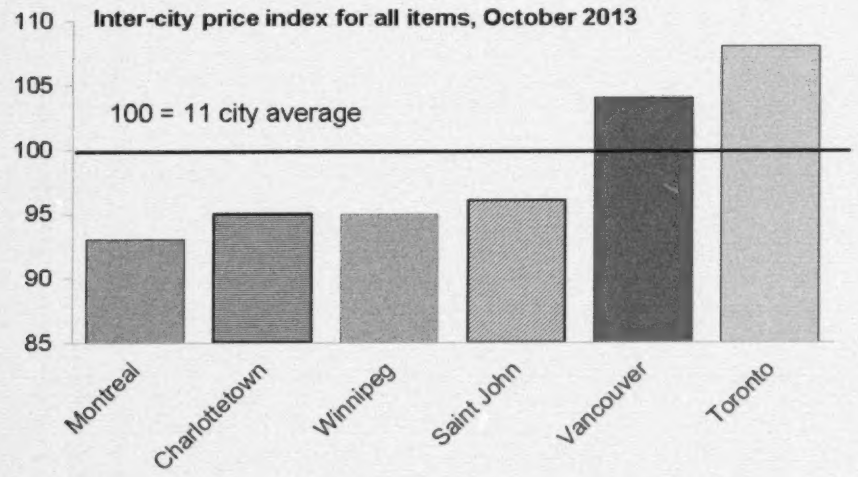
Historically, the high quality of life in Vancouver has come with a price. The cost of living in Vancouver is still considerably higher than for many other metropolitan cities in the country. In 2013, Vancouver was the second most expensive urban centre in Canada, for both general retail prices and for shelter costs. [21]

With a rate of 104, retail prices in Vancouver were four points higher than the combined city average (100) in October 2013, down slightly from 2012 (105). As figure L-4 illustrates, although Vancouver's rate remained above average, it was below that of Toronto (108). On the other end of the scale, Montreal (93), Charlottetown (95) and Winnipeg (95) continued to enjoy lower than average retail prices.

Shelter costs comprise the largest component of the inter-city price index. In 2013, Vancouver's cost for shelter was nine points above average, the second highest in Canada. In Toronto, shelter costs were a substantial 15 points above average, while those in Charlottetown (20 points lower) and Saint John (18 points lower) were well below average.

[21] Based on an average of the largest cities in each of the ten provinces as well as the nation's capital (11 cities total). Note that the inter-city price index measures only the price differences for a specific basket of goods, which may or may not be representative of the overall cost of living for each specific city.

INDICATOR L-4: RETAIL PRICES BY MAJOR CITY



Retail prices in Vancouver are above those of the average metropolitan city in Canada, but lower than those in Toronto

Note: This index measures only the price differences for a specific basket of goods, which may or may not be representative of the overall cost of living for each specific city.
Data source: Statistics Canada

8. Post-Secondary Outcomes

Data from the Diploma, Associate Degree, and Certificate Student Outcomes (DACSO) Survey and from the Baccalaureate Graduates Survey (BGS) provides an understanding of the educational and post-academic experiences of British Columbia's post-secondary students. This information is useful in determining if the educational programs are meeting the learning needs of former students of high technology-related programs and of former post-secondary students who hold jobs in the high technology industry.

The DACSO Survey is one of the annual surveys in the BC Student Outcomes program, which collects information from B.C.'s former post-secondary students. The DACSO Survey asks former students from diploma, associate degree, and certificate programs to evaluate their educational experiences and to talk about their employment and further education. It is conducted 9 to 20 months after students leave their programs.

The BGS is also part of BC Student Outcomes. Since 2000, the BGS has been tracking the outcomes of baccalaureate graduates, both two and five years after graduation. The BGS gathers information on baccalaureate graduates' education satisfaction levels, financing and student debt, further studies, and employment outcomes. BGS data used in this report are from the two-year out survey cycle only.

The surveys are conducted with funding from the Ministry of Advanced Education and the participating post-secondary institutions.

Respondents to both surveys were asked about their satisfaction with their education, the quality of instruction, whether they enrolled in further studies after graduation, and their current activities (e.g., studying or working). The survey results also provide insight into the unemployment rates for graduates of high technology programs.

Among those who were employed, the surveys provide information about the characteristics of employment, including whether the job is full-time, if it is related to the training they received, and if it involves paid employment (versus self-employment). Average weekly hours worked and average hourly wages (DACSO) or average annual salary (BGS) are also available. Finally, the top occupations among high technology program graduates are provided, as are the programs from which high technology job holders graduated. Only graduate[22] respondents were included in this report.

[22] Throughout this section of the report, 'graduates' is used to refer to former students who graduated from their programs and responded to the survey.

TABLE 7: QUICK SUMMARY OF INDICATORS FOR POST-SECONDARY OUTCOMES

INDICATORS	DACSO Graduates		BGS Graduates	
	High Tech Program	Non-High Tech Program	High Tech Program	Non-High Tech Program
O-1: Satisfaction with education	93%	93%	92%	94%
O-2: Quality of instruction~	95%	95%	92%	95%
O-3: Further studies since graduation	31%	35%	56%	54%
O-4: Current activity:				
Studying	12%	8%	23%	9%
Studying and working	13%	19%	15%	19%
Working	65%	63%	56%	65%
Neither studying nor working	9%	10%	7%	7%
O-5: In the labour force	88%	91%	78%	90%
O-6: Employment rates	79%	82%	70%	83%
O-7: Unemployment rates	10.1%	9.4%	9.7%	7.3%
O-8: Job related to training^	82%	76%	71%	73%
O-9: Knowledge, skills & abilities useful in job^	86%	83%	81%	85%
	DACSO Graduates		BGS Graduates	
	Employed in High Tech Occupations	Not Employed in High Tech Occupations	Employed in High Tech Occupations	Not Employed in High Tech Occupations
O-11: Training related to job^	93%	77%	85%	73%
O-12: Paid worker^!	95%	95%	95%	95%
O-13: Full-time employment^	86%	76%	96%	82%
O-14: Median income (hourly for DACSO, annual for BGS)	$25	$19	$57,000	$44,200

~ On the DACSO Survey, quality of instruction was asked using a 5-point scale: very good, good, adequate, poor, and very poor. Percentages presented for DACSO quality of instruction include very good, good, and adequate. On the BGS Survey, quality of instruction was asked using a 4-point scale: very good, good, poor, and very poor. Percentages presented for BGS quality of instruction include very good and good.

^ Of those respondents who indicated they were employed.

! In the DACSO Survey, respondents were asked if they were paid workers or self-employed. In the BGS Survey, respondents were asked if they were paid workers, self-employed, or both a paid worker and self-employed. Percentages presented for the BGS Survey represent the percentage of respondents who indicated they were solely a paid worker and those who indicated they were both a paid worker and self-employed.

Note that data from the DACSO and BGS surveys are for British Columbia only and, therefore, provincial comparisons are not available. Due to small numbers, three years of data had to be combined in order to be able to have reportable figures. As a result, time series comparisons are not possible either. Indicator O-10 is not amenable to a quick summary presentation and, therefore, is excluded here.

8.1. Education Evaluation

The indicators explained:

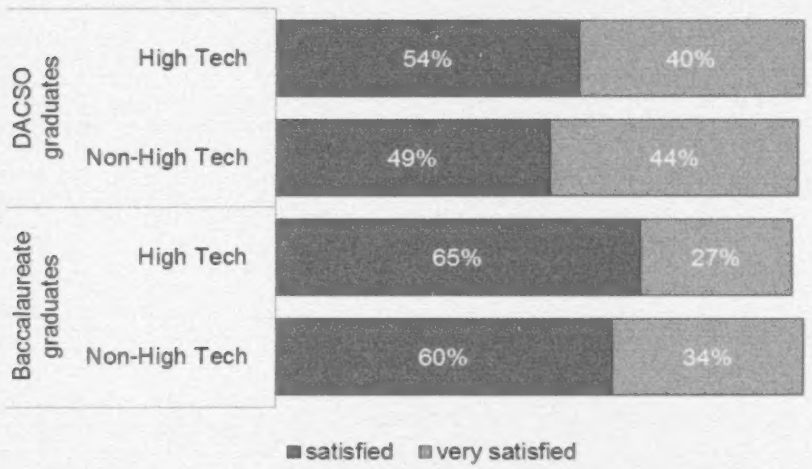
An education in a high technology program area—such as Physical and Life Sciences; Computer and Information Sciences; Engineering and Related Technologies; and Health and Clinical Sciences—provides a skilled workforce ready for employment in high technology occupations. Satisfaction with studies and high quality instruction are indicative of programs that prepare graduates well for work in these fields.

A number of the post-secondary educational programs delivered in B.C. fall within the definition of 'high technology'. They include Engineering Technologies/Technicians, Biological and Physical Sciences, Computer and Information Sciences, and Health Professions and Related Clinical Sciences.

The programs taken by DACSO respondents have been grouped into four program areas: Physical and Life Sciences, Computer and Information Sciences, Engineering and Related Technologies, and Health and Clinical Sciences. The BGS Survey included program graduates from Physical and Life Sciences, Computer and Information Sciences, and Engineering and Related Technologies.

As seen in figure O-1, high technology program graduates reported high levels of satisfaction with their education. Almost all DACSO (93%) and BGS (92%) high technology program graduates said they were very satisfied or satisfied with their education, comparable to graduates of non-high technology programs.

INDICATOR O-1: SATISFACTION WITH EDUCATION



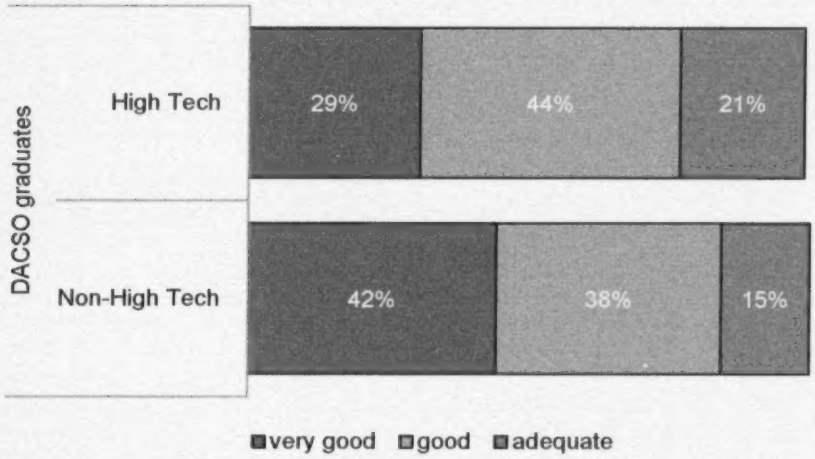
Nearly all graduates were satisfied with their education

Note: Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey.

Post-secondary graduates also gave favourable reviews of their course instruction. Most (95%) high technology DACSO graduates said that the quality of the instruction they received was adequate or better, on par with graduates from other programs.

INDICATOR O-2 (A): QUALITY OF INSTRUCTION AMONG DACSO GRADUATES

DACSO Graduates were happy with the quality of their instruction

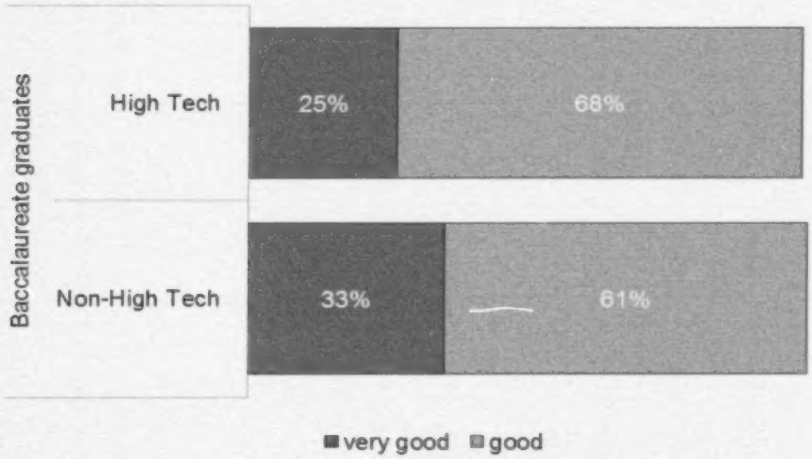


Note: On the DACSO Survey, quality of instruction was asked using a 5-point scale: very good, good, adequate, poor, and very poor. Percentages presented for DACSO quality of instruction include very good, good, and adequate. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey

As figure O-2(B) shows, among high technology baccalaureate program graduates, 92% reported that the quality of their instruction was good or better, slightly lower than the percentage of non-high technology graduates (95%).

INDICATOR O-2 (B): QUALITY OF INSTRUCTION AMONG BGS GRADUATES

BGS graduates rate the quality of their instruction highly



Note: On the BGS Survey, quality of instruction was asked using a 4-point scale: very good, good, poor, and very poor. Percentages presented for BGS quality of instruction include very good and good. Numbers may not add due to rounding.
Data source: BC Student Outcomes, Baccalaureate Graduates Survey

8.2. Study and Work Activities

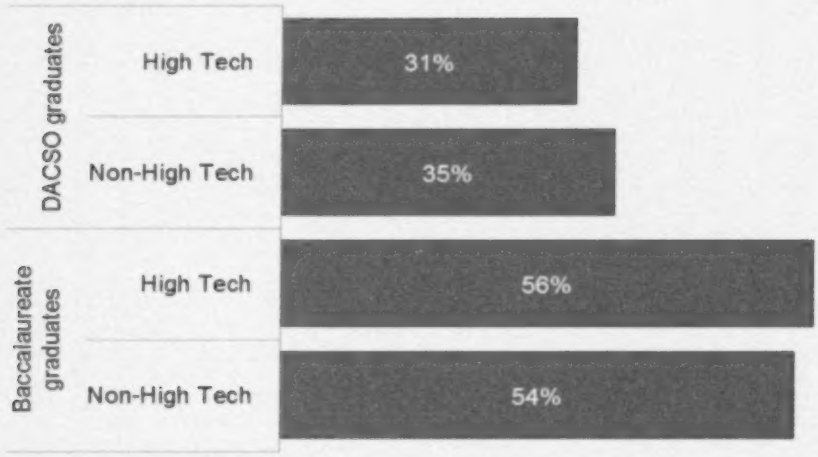
The indicators explained:

Readiness to join the workforce is suggested by a high proportion of former students who are working following their education, while continuing studies indicates additional education is needed or desirable.

Figure O-3 illustrates that nearly a third (31%) of DACSO graduates and over half (56%) of baccalaureate graduates from high technology programs had pursued further studies since graduation. Additional education was more common among DACSO graduates from other programs and less common among BGS graduates from other programs.

INDICATOR O-3: FURTHER EDUCATION

Many graduates chose to further their education

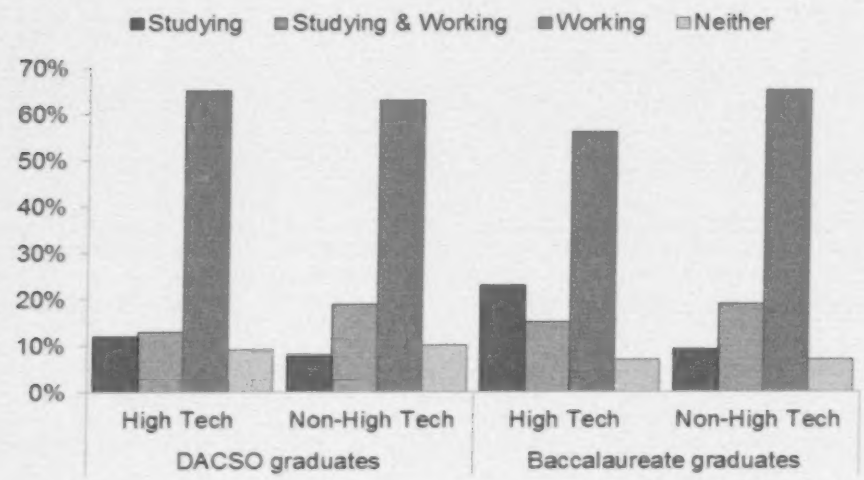


Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey.

Figure O-4 shows that graduates from high technology programs tended to be working at the time of the survey. Nearly two-thirds (65%) of DACSO and more than half (56%) of BGS high technology program graduates were solely working. Approximately one in four DACSO graduates of high technology programs and four in ten BGS graduates were studying, or studying and working at the time they were surveyed.

This pattern for DACSO graduates of both high technology and non-high technology programs was similar. On the other hand, for baccalaureate graduates, the distribution looked different depending on whether former students graduated from high technology or non-high technology programs. The current activities of high technology baccalaureate graduates were more likely to involve studies and less likely to include work when compared to non-high technology baccalaureate graduates.

INDICATOR O-4: CURRENT ACTIVITY AT THE TIME OF THE SURVEY



Most DACSO and BGS graduates were working at the time they were surveyed

Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

8.3. Labour Force Outcomes

The indicators explained:

Participation in the labour force and high employment rates indicate positive employability among high technology program graduates. Unemployment, however, does not necessarily indicate that graduates are not employable. Rather, it may be that the job market favours those with additional training or experience. High proportions of post-secondary graduates working in training-related jobs are indicative of a strong high technology workforce. Receiving the right training is vital and this is corroborated by a majority of graduates reporting that the training they received is useful in the performance of their jobs.

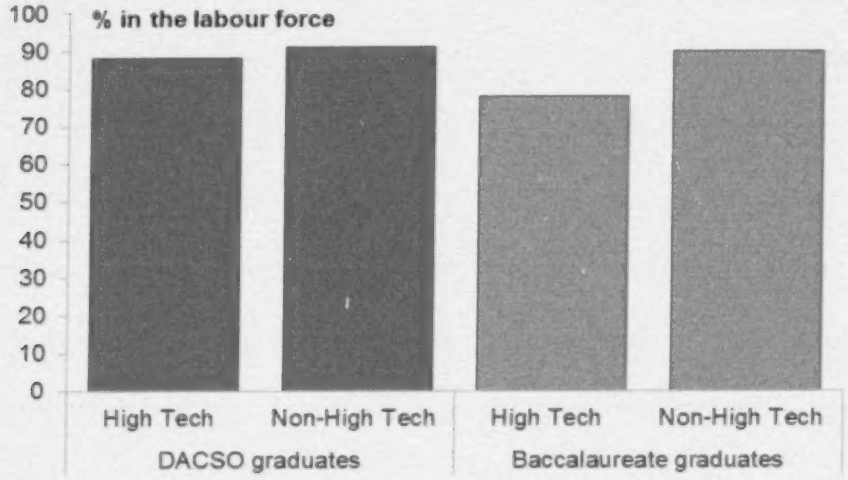
At the time of the survey, the majority of post-secondary program graduates were in the labour force, but some pursued further education instead. This was particularly the case for graduates with baccalaureates.

Figure O-5 shows that approximately 9 out of 10 DACSO graduates were in the labour force at the time of the survey—88% of high technology graduates and 91% of non-high technology program graduates.

Among baccalaureate graduates, 78% of high technology graduates and 90% of non-high technology graduates were in the labour force. This disparity is likely due to the fact

that nearly a quarter (23%) of BGS high technology grads were engaged solely in studies at the time of the survey, whereas just nine percent of graduates from non-high technology disciplines were exclusively dedicated to studying.[23]

INDICATOR O-5: IN THE LABOUR FORCE POST-GRADUATION



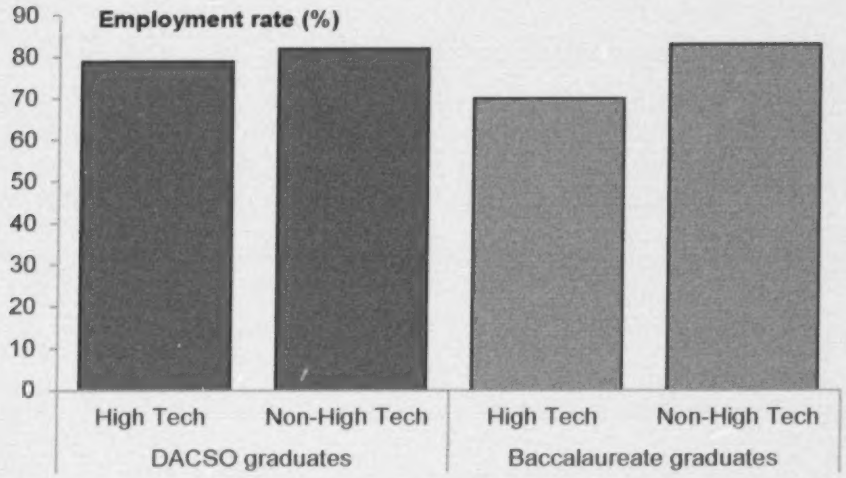
BGS high technology graduates were less likely to be in the labour force than their non-high tech counterparts

Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

As seen in figure O-6, the employment rate for high technology baccalaureate graduates (70%) was also considerably lower than for non-high tech BGS graduates (83%). This too may be due to the group of high technology graduates who are exclusively studying.

[23] Note that some may be looking for work and would therefore be considered in the labour force

INDICATOR O-6: EMPLOYMENT RATES POST-GRADUATION



Employment rates were lower among high tech BGS graduates than those of non-high tech BGS graduates

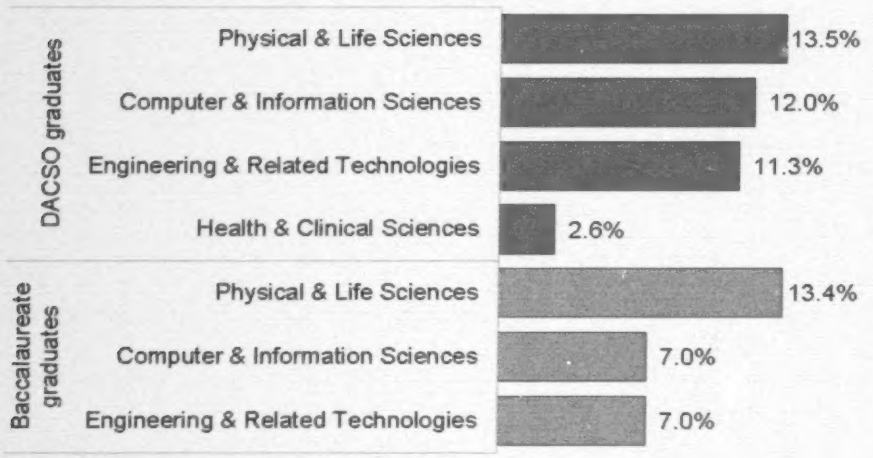
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey.

Figure O-7 shows that the unemployment rate for DACSO high technology program graduates was 10.1%, while the rate for graduates from other programs was slightly lower (9.4%). There was significant variation among the four high technology programs surveyed. For example, the jobless rate for graduates of Health and Clinical Sciences (2.6%) was notably lower than for graduates of other high technology programs.

There were also substantial differences in unemployment rates among the three high technology program groups surveyed by the BGS. The unemployment rate for Physical and Life Sciences graduates (13.4%) was nearly double that of graduates from other programs. At the time of the survey, the unemployment rate for high technology baccalaureate graduates overall was 9.7%, compared to 7.3% for BGS graduates from other programs.

INDICATOR O-7: HIGH TECHNOLOGY GRADUATES: UNEMPLOYMENT RATES POST-GRADUATION

Graduates faced different unemployment rates depending on their field of study

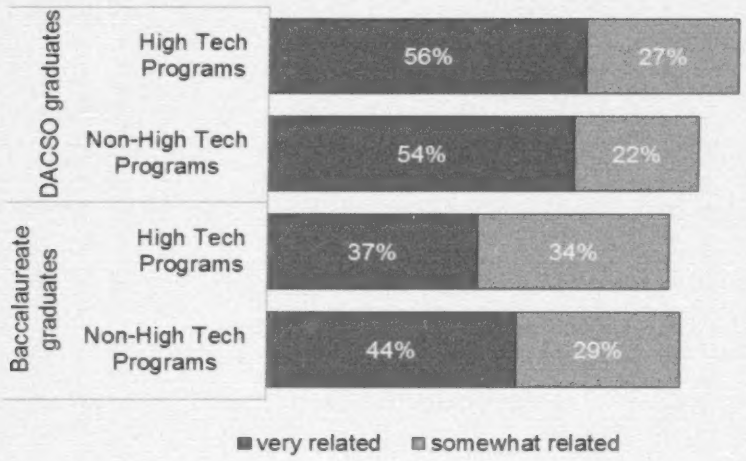


Note: Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

At the time of the survey, most graduates were working in jobs that were related to their training, which suggests that, at the time of the surveys, there was a market for their skills. As seen in figure O-8, approximately 82% of high technology program DACSO graduates and 76% of DACSO graduates from other programs were employed in training-related jobs. Similarly, among baccalaureate graduates, about 7 out of 10 were employed in jobs related to their training with 71% of those from high technology programs and 73% of those from other programs in training-related positions.

It is difficult to ascertain why, for some grads, there was a lack of correspondence between their jobs and their education. It is possible that the market was insufficient, but it is also feasible that certain graduates made the decision to work in different fields.

INDICATOR O-8: JOB RELATED TO TRAINING



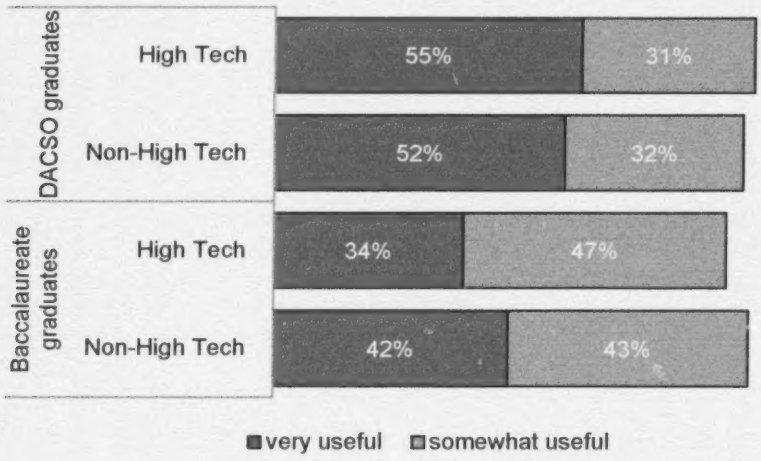
Most graduates of high tech programs were working in high tech jobs

Note: Results presented are for employed graduates only. Numbers may not add due to rounding. Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

As figure O-9 shows, among DACSO graduates, approximately 86% of those from high technology programs and 83% of graduates from other programs reported that their education was useful in the performance of their job. Baccalaureate graduates who had completed high technology programs were less likely than non-high technology graduates to say that their education was useful in the performance of their job—81% versus 85%.

The fact that most graduates, regardless of the job they held, said that what they learned during their education was useful in the performance of their job suggests that their education had a broad-based utility in the labour market.

INDICATOR O-9: KNOWLEDGE, SKILLS, AND ABILITIES GAINED DURING EDUCATION USEFUL IN PERFORMANCE OF JOB



Education is useful in job performance

Note: Results presented are for employed graduates only. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

8.4. Occupations Held by Graduates of High Technology Programs

The indicators explained:

High technology occupations held by graduates of high technology programs demonstrate an alignment between education and employment opportunities.

The National Occupational Classification (NOC) provides a standardized language for describing the work performed by Canadians in the labour market. It gives statisticians, labour market analysts, career counselors, employers, and individual job seekers a consistent way to collect data and describe and understand the nature of work.[24] NOC coding was applied to the data provided by respondents and then the occupations were classified into one of four skill levels that correspond to the training or education (kind and/or amount) required for going into an occupation. Though not separated in the NOC skill levels, management occupations have been split in the following analysis for descriptive purposes.

[24] More information about the NOC can be found at: http://www.hrsdc.gc.ca/eng/jobs/lmi/noc/index.shtml.

As detailed in table O-10 (A), among DACSO graduates, occupations were varied, but generally aligned with the programs job holders completed.

INDICATOR O-10 (A): TOP 3 OCCUPATIONS OF DACSO GRADUATES OF HIGH TECHNOLOGY PROGRAM GROUPS

	High Technology Program			
Top 3 Occupations	Physical & Life Sciences	Computer & Information Sciences	Engineering & Related Technologies	Health & Clinical Sciences
1	Technical Occs. in Physical Sciences - 37%	Tech. Occs. in Computer & Info Systems - 28%	Tech. Occs. In Arch. Draft. Survey. & Map - 19%	Med. Technologists & Technicians. 91%
2	Technical Occupations in Life Sciences - 11%	Computer and Info. Systems Professionals - 23%	Tech. Occs. In Civil, Mech. & Ind. Eng. - 15%	Retail Salespersons & Sales Clerks - 1%
3	Medical Technologists & Technicians - 9%	Creative Designers and Craftpersons - 8%	Computer & Info Sytems Professionals - 8%	Clerical Occupations General Office Skills - 1%

Note: Results presented are for employed graduates only. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey

Baccalaureate graduates' jobs also generally aligned with program areas (see table O-10 (B). Among baccalaureate graduates with degrees in Physical and Life Sciences, there was a wide range of occupations. This is reflected in the fact that only a quarter (25%) of employed graduates from this program held positions in the top three occupations.

INDICATOR O-10 (B): TOP 3 OCCUPATIONS OF BACCALAUREATE GRADUATES OF HIGH TECHNOLOGY PROGRAM GROUPS

	High Technology Program		
Top 3 Occupations	Physical & Life Sciences	Computer & Information Sciences	Engineering & Related Technologies
1	University Professors and Assistants - 11%	Computer and Info. Systems Professionals - 52%	Civil, Mech., Elec. & Chemical Engs. - 46%
2	Sec. & Elem. School Teachers & Counsellors - 7%	Tech. Occs. in Computer & Info Systems - 9%	Computer and Info. Systems Professionals - 14%
3	Technical Occupations in Life Sciences - 7%	Sec. & Elem. School Teachers & Counsellors - 4%	Other Engineers - 12%

Note: Results presented are for employed graduates only. Numbers may not add due to rounding.
Data source: BC Student Outcomes, Baccalaureate Graduates Survey

8.5. High Technology Occupations

The indicators explained:

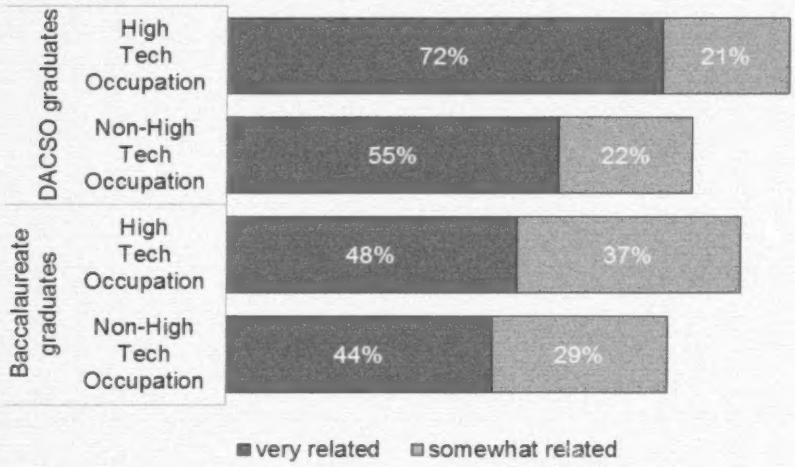
Employment in a high technology occupation provides graduates from high technology programs with an outlet for their skills and abilities. Working in training-related jobs shows an alignment with graduates' education and training.

The three most common occupations among high technology job holders with diplomas, associate degrees, or certificates were medical technologists and technicians (excluding dental), computer and information systems professionals, and technical occupations in electronics and electrical engineering.

Among baccalaureate graduates, the three most common high technology occupations were computer and information systems professionals, civil, mechanical, electrical and chemical engineers, and technical occupations in the physical sciences.

The majority of DACSO (93%) and BGS (85%) graduates who had high technology occupations graduated from high technology programs, suggesting a significant alignment between students' programs of study and their future occupations.

INDICATOR O-11: TRAINING-RELATED JOB HELD BY DACSO AND BGS GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS



Most graduates were working in jobs that were related to the training they received

Note: Results presented are for those graduates who were employed at the time they were surveyed.
Numbers may not add due to rounding.
Data source: BC Student Outcomes, DASCO Survey and Baccalaureate Graduates Survey

As seen in table 8, close to four out of ten (36%) DACSO graduates in high technology occupations came from Health and Clinical Sciences programs, and approximately one-

quarter (23%) completed programs in Engineering and Related Technologies. Among BGS graduates working in high technology occupations, just under one-third (31%) had degrees from Engineering and Related Technologies programs, and a quarter (25%) graduated from Computer and Information Sciences programs.

TABLE 8: GRADUATING PROGRAM FOR HIGH TECHNOLOGY JOB HOLDERS

Program of Origin	DACSO High Technology Job Holders Percent	BGS High Technology Job Holders Percent
Health and Clinical Sciences	36%	n/a
Engineering and Related Technologies	23%	31%
Computer and Information Sciences	15%	25%
Physical and Life Sciences	4%	21%
Non-High Technology	22%	23%

Note: Results presented are for those graduates who were employed in high technology occupations at the time they were surveyed. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

Looking deeper at the top three high technology occupations held by graduates, there was a fairly high degree of correspondence between occupation and high technology program area (see table 9 and 10). Indeed, among BGS graduates, almost all (93%) civil, mechanical, and chemical engineers completed programs in Engineering and Related Technologies. Similarly, almost all (92%) DACSO graduates who became medical technologists and technicians (excluding dental) completed programs in Health and Clinical Sciences.

TABLE 9: DACSO PROGRAM OF ORIGIN FOR TOP 3 HIGH TECHNOLOGY OCCUPATIONS

Program of Origin	Medical Technologists and Technicians (excl. dental)	Computer and Information Systems Professionals	Technical Occupations in Electronics and Electrical Engineering
Health and Clinical Sciences	92%	0%	0%
Engineering and Related Technologies	0%	31%	69%
Computer and Information Sciences	0%	42%	2%
Physical and Life Sciences	1%	0%	0%
Non-High Technology	7%	27%	29%

Note: Results presented are for those graduates who were employed in high technology occupations at the time they were surveyed. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DASCO Survey

TABLE 10: BGS PROGRAM OF ORIGIN FOR TOP 3 HIGH TECHNOLOGY OCCUPATIONS

Program of Origin	Computer and Information Systems Professionals	Civil, Mechanical, Electrical and Chemical Engineers	Technical Occupations in Physical Sciences
Engineering and Related Technologies	24%	93%	4%
Computer and Information Sciences	52%	0%	1%
Physical and Life Sciences	3%	4%	57%
Non-High Technology	22%	2%	38%

Note: Results presented are for those graduates who were employed in high technology occupations at the time they were surveyed. Numbers may not add due to rounding.
Data source: BC Student Outcomes, Baccalaureate Graduates Survey

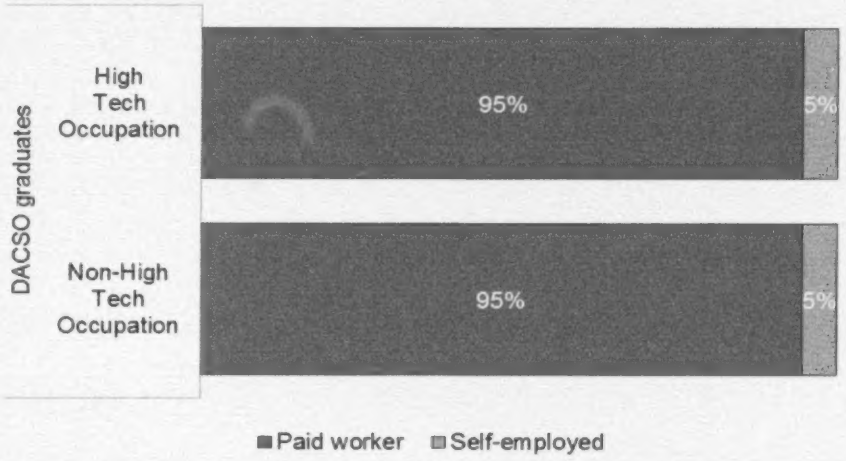
8.6. Employment Characteristics

The characteristics explained:

A high proportion of individuals employed as paid workers indicates there is a market for skilled high technology workers. Self-employment suggests there is a niche for high technology-related entrepreneurship. The proportion of post-secondary graduates employed full-time in high technology occupations points to availability of work in these areas. The wages received by post-secondary graduates employed in high technology occupations indicate the demand for these jobs and the economic impact they have.

Like graduates in non-high tech occupations, high technology job holders are far more likely to be employed full-time as paid workers than self-employed. Most DACSO and BGS graduates, as seen in figures O-12 (A) and (B) (each 95%) worked for an employer, regardless of whether they had a high technology occupation or not.

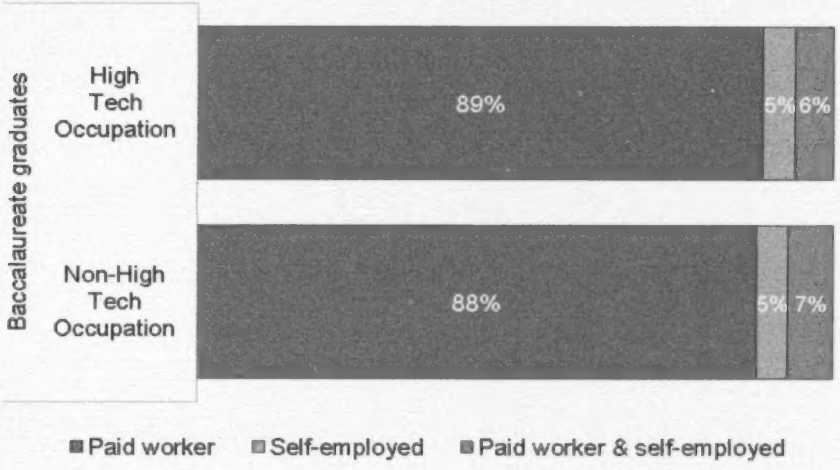
INDICATOR O-12 (A): MAIN JOB PAID EMPLOYMENT OF DACSO GRADUATES



Most DACSO graduates worked as paid employees at their main job

Note: Results presented are for those graduates who were employed at the time they were surveyed. In the DACSO Survey, respondents were asked if they were paid workers or self-employed in their main job. Numbers may not add due to rounding.
Data source: BC Student Outcomes, DACSO Survey

INDICATOR O-12 (B): PAID EMPLOYMENT OF BACCALAUREATE GRADUATES



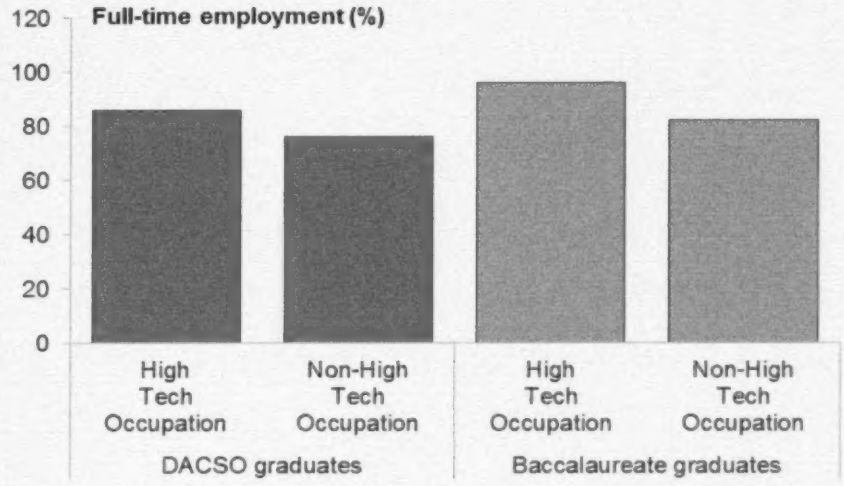
BGS graduates were also more likely to work as paid employees, regardless of whether or not they were in high tech occupations

Note: Results presented are for those graduates who were employed at the time they were surveyed. In the BGS Survey, respondents were asked if they were paid workers, self-employed, or both a paid worker and self-employed. Percentages presented for the BGS Survey represent the percentage of respondents who indicated they were solely a paid worker and those who indicated they were both a paid worker and self-employed. Numbers may not add due to rounding.
Data source: BC Student Outcomes, Baccalaureate Graduates Survey

Graduates employed in high technology occupations were more likely than those working in non-high technology occupations to be employed full-time (working at least

30 hours per week). Approximately 86% of high technology DACSO graduates were employed full-time in their main job, compared to just 76% of non-high tech graduates. The comparable figures for BGS graduates were 96% and 82%, respectively.

INDICATOR O-13: FULL-TIME EMPLOYMENT OF DACSO AND BGS GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS



Graduates in high tech occupations were more likely to hold full-time jobs than non-high tech workers

Note: Results presented are for those graduates who were employed at the time they were surveyed; reported for main job.
Data source: BC Student Outcomes, DACSO Survey and Baccalaureate Graduates Survey

As seen in tables O-14 (A) and (B), graduates employed in high technology occupations also earned higher wages than those in non-high technology jobs. DACSO graduates in high technology occupations earned a median hourly wage of $25 in their main job, compared to $19 for their counterparts in non-high technology occupations. Similarly, the median annual income among baccalaureate graduates employed in high technology jobs was $57,000, while those who did not hold high technology jobs, earned a median annual income of $44,200.

For DACSO graduates employed in one of the top three high technology occupations, those who held positions as medical technologists and technicians (excluding dental) reported the highest median hourly wage ($26) in their main job. For baccalaureate graduates employed in one of the top three high technology occupations, those who were civil, mechanical, electrical, and chemical engineers had the highest median annual income ($65,000) in their main job.

INDICATOR O-14 (A): INCOME FOR DACSO GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

	Median Hourly Wage
Not employed in High Technology Occupations	$19
Employed in High Technology Occupations	$25
Top 3 High Technology Occupations:	
Medical Technologists and Technicians (excl. Dental)	$26
Computer and Information Systems Professionals	$23
Technical Occupations in Electronics and Electrical Engineering	$22

Note: Results presented are for those graduates who were employed at the time they were surveyed; reported for main job.
Data source: BC Student Outcomes, DACSO Survey

INDICATOR O-14 (B): INCOME FOR BACCALAUREATE GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

	Median Annual Income
Not employed in High Technology Occupations	$44,200
Employed in High Technology Occupations	$57,000
Top 3 High Technology Occupations:	
Computer and Information Systems Professionals	$59,870
Civil, Mechanical, Electrical, and Chemical Engineers	$65,000
Technical Occupations in Physical Sciences	$42,000

Note: Results presented are for those graduates who were employed at the time they were surveyed; reported for main job.
Data source: BC Student Outcomes, Baccalaureate Graduates Survey

9. Conclusion

Relative to other parts of the country, British Columbia fares reasonably well with regard to providing an environment that will attract high technology businesses.

In terms of educational attainment, the province has experienced an overall upward, improving trend in most areas. B.C. leads the country in technology adoption and the province's top university (UBC) continues to outperform most of the nation's other U-15 institutions in licensing, patents and start-up companies. Conversely, there remains room for improvement in some of the performance indicators, particularly in higher education performance of R&D.

The province's investment in venture capital has begun to regain momentum, with recent increases in overall investment, provincial and per capita shares. British Columbia's business sector has also shown promise in performance of R&D. Companies in the high tech sector appear to be thriving, with an increase in entries and high growth companies and fewer business exits. In the business sector, B.C. sits below several other provinces in terms of patents granted.

With the exception of performance of R&D, the province's government sector ranks relatively well compared to other provinces, particularly with regard to its comparatively low tax rates for business.

The province's immigrant population is well educated, but overall immigrant education levels lag many other provinces, especially in recent years. However, B.C. appears to be expanding its general labour pool substantially, ranking second in the country in net interprovincial migration in 2014. High tech imports were up in 2013, indicating that the industry is strengthening.

The province's unemployment rate for natural and applied sciences is low compared to several other provinces, and B.C.'s research workforce remains strong. In terms of attracting workers, Vancouver is still one of the most desirable metropolitan cities to call home, but this comes at a price, as its cost of living index exceeds that of most of its counterparts in other provinces.

Graduates from high technology-related disciplines are generally satisfied with their education and find their studies useful in the workplace. Most of these graduates are successful at finding full-time employment in fields related to their education.

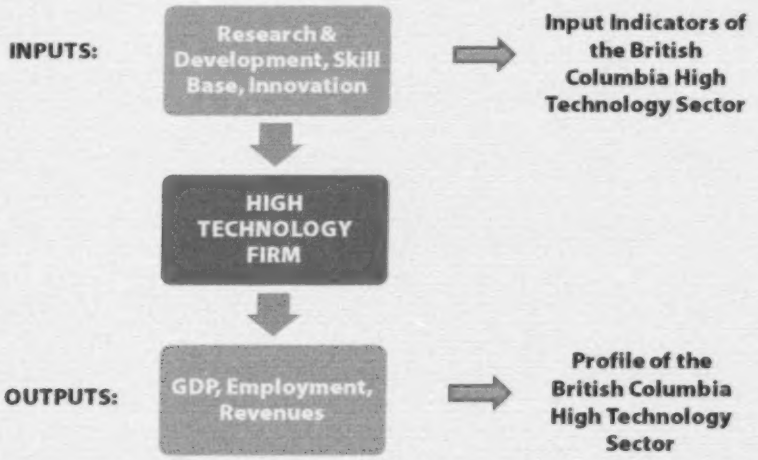
Given the importance of the high technology sector in today's global community, along with the potential for boosting business and employment in the province, the environment that B.C. provides is of high significance. If B.C.'s high technology sector is to continue to grow, there must be a continuing effort to ensure that the province maintains the right environment to attract high technology businesses.

10. Appendix I: BC Stats' Sector Model

In BC Stats' model of the high technology sector (see section 10.2. "Modeling the High Technology Sector,"), the firm is the centre of the system of high technology production. The firm receives inputs, in the form of labour, physical and financial capital, raw materials and parts, and knowledge. Knowledge may be embodied in labour (human capital) or other inputs, or it may come in the form of patents and copyrights, books and electronic information, etc. Through its internal operations, the firm then produces outputs. These outputs are products and services, and (in some views) also include employment and other benefits to society.

This firm-centred view underlies BC Stats' publication strategy for high technology sector information, as shown in the diagram below.

FIGURE 1: BC STATS' PRODUCTS FOR MONITORING THE HIGH TECHNOLOGY SECTOR


INPUTS:
Research & Development, Skill Base, Innovation
Input Indicators of the British Columbia High Technology Sector
HIGH TECHNOLOGY FIRM
OUTPUTS:
GDP, Employment, Revenues
Profile of the British Columbia High Technology Sector

10.1. What is an Indicator?

The concept of indicators is well understood in the operation of machines. For instance, the dashboard of a car has many indicators. The speedometer measures the main output, which is forward motion. However, gauges such as oil pressure and water temperature assess how well the engine is working as a system. They predict the engine's future performance, and may suggest the need for specific adjustments.

Predicting the future, in terms of the economy, requires an examination of the chain of events that lead to the production of specific outputs and the development of indicators for those steps in the chain judged to be most important. Similarly, predicting the future of the high technology sector requires developing a model of what drives growth in the sector, and then obtaining indicators for each component of the model.

In selecting indicators, consideration must be given not only to their place in a growth model of the high technology sector, but also to their accuracy and availability. Indicators should meet other tests as well. In the annual (since 1997) *Index of the Massachusetts Innovation Economy*,[25] all potential indicators are subject to a set of five criteria. The indicators selected for inclusion in the report are:

- derived from objective and reliable data sources,
- statistically measurable on an ongoing basis,
- bellwethers that reflect the fundamentals of economic vitality,
- understood and accepted by the community, and
- measurements of conditions in which there is an active public interest.

These criteria help ensure that the indicators become relevant to politicians and citizens as well as to statisticians, and have thus been adopted for this report as well.

10.2. Modeling the High Technology Sector

In 1998, BC Stats, the Information, Science and Technology Agency of British Columbia, and the Science Council of British Columbia began a collaboration to devise a model of the B.C. high technology sector, with an associated set of indicators. This resulted in two working papers. The first reviewed definitions of the high technology sector and models of the innovation economy in other jurisdictions, while the second proposed a model for use in B.C., together with a large number of potential indicators for that model.[26] Subsequently, BC Stats has simplified the model and prepared a

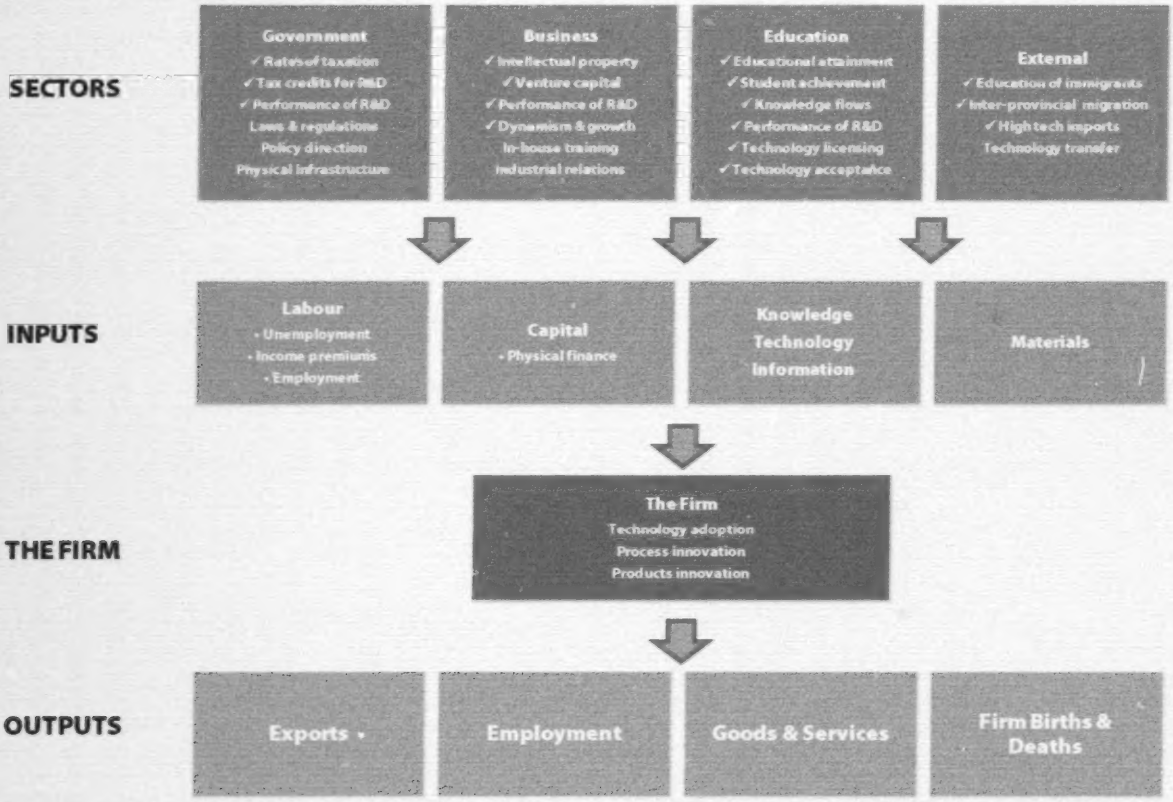
[25] Massachusetts Technology Collaborative, Annual *Index of the Massachusetts Innovation Economy*, 2014. Available at: www.masstech.org

[26] Koebberling, Uschi and Veneranda Dettmers, "A Model of the BC High Technology Sector: Description of Factors and Linkages Affecting the Growth of the High Technology Sector in the Context of an Innovation Economy," Science Council of BC, April 1999. Available at www.llbc.leg.bc.ca/public/pubdocs/bcdocs/358283/high_technology.pdf

corresponding shorter list of indicators. The simplified model and indicators form the basis for this publication.

The traditional model of economic production focuses on land, labour and capital, which are the "factors of production" or inputs into the production process. These factors are transformed by firms, other organizations, or individuals into valued goods and services. GDP is the main measure of that value and is the most common statistic used to describe the production of economic sectors. This traditional model can be thought of as an input/output view of the economy. The inputs are obtained from a variety of sources and enter a production process, resulting in outputs.[27]

FIGURE 2: MODEL OF THE HIGH TECHNOLOGY SECTOR



The advent of the "information economy" has added a new dimension to traditional economic production, and some efforts to describe it seem quite new as well. However,

[27] This is also referred to as the neoclassical model. See Lipsey, Richard G. and Kenneth Carlaw, "A Structuralist Assessment of Technology Policies—Taking Schumpeter Seriously on Policy," Working Paper #25, Industry Canada, Research Publications Program, October 1998. Available at www.ic.gc.ca/cic/site/eas-aes.nsf/eng/ra01700.html

the input/output view can readily be adapted to the information economy. In the model above, the firm is at the centre of the productive system. As in the traditional model, the firm receives inputs; however, knowledge, technology and information are distinguished as a unique category. This can include patents and copyrights, software, information on production methods, etc. In addition, it is recognized that the other factors—labour, capital and materials—each have critical and increasing quantities of knowledge embodied in them.

The diagram then looks beyond the production inputs, to analyze their sources (the top row of boxes). For example, skilled labour may come from training courses in educational institutions, from in-house training, or from other provinces or countries. The sources for the inputs have been categorized as four "sectors." Within each sector, particular areas that bear on the production inputs are identified. These areas are the ones for which indicator variables have been sought out. The areas listed in bold, and checked, are the ones for which data are available and have been collected by BC Stats.

While the indicator variables have normally been sought out at the level of the source sectors, certain labour indicators, such as the unemployment rate, are not attributable to a single source sector. Such indicators have been grouped in a separate "Labour" section.

Once the inputs are obtained by the firm, they are transformed in a way that depends on the firm's many characteristics. Some of the characteristics of most importance for high technology firms are listed within the "The Firm" box in the diagram.[28]

Finally, the firm produces and sells goods and services, some of which are consumed locally, while the remainder are exported, as depicted in the bottom row. It should be recognized that even with a simplified model such as the one set out here, it is possible to imagine a large number of interactions. That is, almost every box or element within the boxes could be joined by an arrow to every other box or element. In turn, a complete statistical system based on the model would track the flows of people, dollars or information along each of the pathways (arrows). Such a comprehensive approach is neither practical, nor would it necessarily lead to greater understanding and better policy. However, statistics are available on a significant number of the interactions, providing a strong source for future research.

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[28] For an in-depth study of uses of knowledge within high technology firms, see Canada's 2002 Innovation Strategy reports: Knowledge Matters: Skills and Learning for Canadians and Achieving Excellence: Investing in People, Knowledge and Opportunity available at http://publications.gc.ca/site/eng/108190/publication.html and Schuetze, Hans, Innovation, Skills, and Learning: A Study of Knowledge and Human Resources Management in Small and Medium Sized Enterprises in British Columbia, Centre for Policy Studies in Education, University of British Columbia, March 1998.

11. Appendix II: Definitions of the High Technology Sector

The table below describes the North American Industry Classification System-based definition of the High Tech Sector in British Columbia. This is the most recent definition developed to describe B.C.'s high technology sector. More detail on the industries and why they are included can be found in *Profile of the British Columbia High Technology Sector*, which is available at: www.bcstats.gov.bc.ca

TABLE 11: INDUSTRIES IN THE HIGH TECHNOLOGY SECTOR

NAICS	Industry Description
Manufacturing Industries	
325189	Other Inorganic Chemicals
325410	Pharmaceutical and Medicine
333310	Commercial and Service Industry
334110	Computer and Peripheral
334210	Telephone Apparatus
334220	Radio, Television Broadcasting & Wireless Communications Equipment
334290	Other Communications Equipment
334310	Audio and Video Equipment
334410	Semiconductor and Other Electronic Components
334511	Navigational and Guidance Instruments
334512	Measuring, Medical and Controlling Devices
334610	Manufacturing and Reproducing Magnetic and Optical Media
335315	Switchgear and Switchboard, and Relay and Industrial Control Apparatus
335920	Communication and Energy Wire and Cable
335990	All Other Electrical Equipment and Component
336410	Aerospace Products and Parts
339110	Medical Equipment and Supplies
Service Industries	
511211	Software Publishers (Except Video Game Publishers)
511212	Video Game Publishers
512110	Motion Picture and Video Production
512190	Post-Production and Other Motion Picture and Video Industries
515210	Pay and Specialty Television
517111	Wired Telecommunications Carriers (Except Cable)
517112	Cable and Other Program Distribution
517210	Wireless Telecommunications Carriers (Except Satellite)
517410	Satellite Telecommunications
517910	Other Telecommunications
518210	Data Processing, Hosting and Related Services
519130	Internet Publishing and Broadcasting, and Web Search Portals
541330	Engineering
541360	Geophysical Surveying and Mapping Services
541370	Surveying and Mapping (Except Geophysical) Services
541380	Testing Laboratories
541514	Computer Systems Design and Related (Except Video Game Design and Development)
541515	Video Game Design and Development Services
541620	Environmental Consulting
541690	Other Scientific and Technical Consulting
541710	Research and Development in Physical, Engineering and Life Sciences
541720	Research and Development in the Social Sciences and Humanities

12. Appendix III: Detailed Tables

12.1. Educational Indicators

INDICATOR E-1. PERCENTAGE OF THE POPULATION AGED 15 YEARS AND OLDER WITH A HIGH SCHOOL DIPLOMA

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	75.7%	76.2%	77.0%	77.3%	78.3%	78.9%	79.5%	80.3%	81.0%	81.5%	82.1%
NL	68.1%	67.3%	68.8%	69.7%	70.3%	71.0%	72.0%	73.9%	74.3%	75.4%	76.8%
PE	70.0%	70.6%	71.9%	72.1%	72.5%	72.5%	74.1%	76.0%	76.7%	77.4%	78.6%
NS	72.4%	73.1%	74.0%	74.1%	75.4%	75.3%	76.0%	77.7%	78.2%	79.0%	80.1%
NB	71.3%	71.8%	72.3%	73.5%	73.8%	74.6%	75.5%	76.1%	75.6%	77.3%	77.4%
QC	71.8%	72.3%	73.6%	74.1%	75.2%	75.8%	76.2%	77.2%	78.1%	79.0%	79.3%
ON	77.2%	77.7%	78.2%	78.6%	79.6%	80.1%	80.6%	81.5%	82.2%	82.5%	83.2%
MB	72.9%	73.7%	74.3%	74.3%	74.5%	76.2%	76.9%	77.7%	78.7%	78.8%	79.3%
SK	73.1%	73.5%	74.4%	74.6%	75.5%	76.7%	78.1%	79.0%	79.4%	80.0%	81.4%
AB	77.9%	78.4%	79.7%	79.7%	80.9%	81.0%	82.1%	82.2%	82.7%	82.8%	83.3%
BC	**80.1%**	**80.7%**	**80.9%**	**80.7%**	**81.5%**	**82.3%**	**83.1%**	**83.7%**	**84.5%**	**84.5%**	**85.6%**

Source: Statistics Canada

INDICATOR E-2. PERCENTAGE OF THE POPULATION AGED 15 YEARS AND OLDER WITH POST-SECONDARY CREDENTIALS

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	44.7%	45.1%	46.5%	47.3%	48.4%	48.9%	49.4%	50.5%	51.4%	52.1%	52.5%
NL	43.1%	42.1%	43.6%	42.6%	43.3%	44.1%	45.5%	46.9%	47.7%	49.4%	49.8%
PE	43.2%	45.4%	45.1%	45.2%	44.6%	44.3%	46.0%	47.1%	49.1%	50.1%	50.6%
NS	46.0%	47.4%	47.0%	46.9%	47.3%	46.5%	48.8%	51.0%	50.6%	52.5%	52.9%
NB	39.8%	41.2%	41.2%	42.6%	43.0%	44.6%	44.8%	45.0%	45.4%	46.1%	46.6%
QC	46.7%	47.2%	48.8%	49.9%	50.6%	50.8%	51.1%	52.2%	53.3%	54.9%	54.8%
ON	45.5%	45.9%	47.5%	48.7%	50.2%	50.7%	51.0%	52.1%	52.8%	53.2%	53.7%
MB	38.4%	38.4%	39.0%	39.1%	39.0%	40.8%	41.7%	43.1%	43.1%	44.4%	43.9%
SK	39.4%	38.8%	39.4%	39.7%	40.2%	40.4%	41.0%	42.3%	42.7%	43.5%	44.1%
AB	44.9%	44.7%	46.5%	46.7%	47.7%	48.6%	49.6%	49.8%	50.2%	50.2%	50.8%
BC	**43.6%**	**44.5%**	**45.0%**	**45.5%**	**47.2%**	**47.9%**	**48.2%**	**49.8%**	**51.8%**	**52.1%**	**52.8%**

Source: Statistics Canada

INDICATOR E-3, TABLE A. CANADA-WIDE RANK OF 13 YEAR-OLD ACHIEVEMENT IN SCIENCE

	2010	2010 rank	2013	2013 rank
Alberta	515	1	521	1
Ontario	510	2	511	2
British Columbia	**497**	**3**	**501**	**3**
Newfoundland and Labrador	487	7	500	4
Nova Scotia	489	5	492	5
Prince Edward Island	493	4	491	6
Saskatchewan	488	6	486	7
Quebec	486	9	485	8
New Brunswick	487	7	469	9
Manitoba	486	9	465	10
Canada	500	n/a	500	n/a

Source: Council of Ministers of Education, Canada

INDICATOR E-3, TABLE B. CANADA-WIDE RANK OF 13 YEAR-OLD ACHIEVEMENT IN MATHEMATICS

	2010	2010 rank	2013	2013 rank
Quebec	515	1	527	1
Ontario	507	2	512	2
Alberta	495	3	502	3
Prince Edward Island	460	10	492	4
British Columbia	**481**	**4**	**489**	**5**
Saskatchewan	474	6	488	6
Nova Scotia	474	6	488	6
Newfoundland and Labrador	472	8	487	8
New Brunswick	478	5	480	9
Manitoba	468	9	471	10
Canada	500	n/a	507	n/a

Source: Council of Ministers of Education, Canada

Notes for Indicators E-4 through E-8:
As of 2009, the college graduate counts are based on the calendar year to align with how university graduates are reported. For years prior to 2009, college graduate counts were based on an academic year. Due to the transition, some graduates reported in 2009 may have also been reported in 2008.
From 2005 to 2008, figures for the graduates from the University of Regina are not available and are therefore not included in the counts for Saskatchewan.

INDICATOR E-4, TABLE A. TOTAL BACHELOR DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	539.5	560.1	584.0	588.3	617.6	665.5	627.9	625.2	619.7	629.3	640.1
NL	505.6	535.6	529.7	556.5	633.2	638.8	605.3	586.4	564.7	579.3	575.9
PE	433.1	494.4	522.2	573.4	534.1	576.9	592.0	588.9	503.7	608.1	591.6
NS	737.7	819.2	860.0	877.9	930.8	1006.6	887.9	884.6	857.0	851.2	872.1
NB	581.3	590.4	640.3	682.9	723.3	700.5	714.4	666.4	645.2	669.6	610.4
QC	470.4	481.6	504.9	508.8	516.8	518.0	521.1	514.1	510.0	511.6	493.7
ON	586.5	614.3	640.0	661.7	704.0	810.9	763.8	732.1	735.9	751.2	772.5
MB	501.4	552.6	577.2	567.3	602.3	613.0	670.6	616.8	583.0	595.4	582.5
SK	561.4	570.5	559.4	372.9	371.8	367.2	376.7	547.1	420.4	482.9	484.8
AB	552.5	568.8	594.0	582.2	576.2	597.4	550.1	547.2	546.3	527.1	580.0
BC	**491.6**	**490.6**	**513.0**	**512.3**	**563.9**	**580.5**	**477.6**	**553.1**	**561.5**	**577.0**	**595.1**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-4, TABLE B. TOTAL BACHELOR DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	137,733	144,756	152,922	156,153	166,224	181,428	173,469	175,086	175,866	180,696	186,336
NL	2,187	2,322	2,301	2,415	2,739	2,760	2,631	2,577	2,511	2,595	2,592
PE	480	552	588	651	609	660	684	687	597	735	723
NS	5,694	6,369	6,732	6,897	7,350	7,950	7,038	7,047	6,873	6,864	7,053
NB	3,606	3,675	3,999	4,275	4,533	4,401	4,509	4,233	4,125	4,305	3,936
QC	28,893	29,823	31,557	32,121	32,976	33,438	34,035	33,999	34,164	34,656	33,783
ON	57,372	61,077	64,641	67,866	73,254	85,344	81,354	78,888	80,367	83,067	86,616
MB	4,614	5,130	5,421	5,373	5,751	5,892	6,498	6,036	5,769	5,958	5,916
SK	4,440	4,530	4,467	2,982	2,982	2,979	3,105	4,593	3,588	4,182	4,281
AB	13,806	14,517	15,486	15,633	15,990	17,082	16,125	16,437	16,650	16,317	18,429
BC	**16,641**	**16,764**	**17,727**	**17,946**	**20,040**	**20,922**	**17,490**	**20,592**	**21,219**	**22,017**	**22,989**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-5, TABLE A. TOTAL GRADUATE DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	117.8	127.2	140.4	139.1	142.6	146.1	149.6	157.2	164.9	168.5	173.7
NL	93.6	93.4	119.5	103.7	134.5	134.7	120.1	139.3	141.0	166.1	174.6
PE	24.4	21.5	29.3	29.1	81.6	49.8	59.7	66.9	43.0	91.8	68.7
NS	171.4	194.1	239.5	236.4	243.1	232.1	256.2	245.1	261.5	266.0	261.5
NB	71.6	74.2	89.3	92.0	87.6	87.4	93.6	100.6	93.8	96.6	121.0
QC	146.3	163.7	171.7	178.7	175.2	176.6	182.8	179.4	183.0	189.3	196.2
ON	121.3	129.8	137.7	140.2	139.8	143.9	155.6	168.6	182.0	187.5	188.1
MB	76.6	60.4	66.1	75.7	77.9	83.6	82.1	79.1	81.6	84.5	91.0
SK	81.9	86.5	87.9	62.3	62.1	61.4	71.0	115.8	114.2	126.8	85.6
AB	101.4	107.7	129.6	105.9	130.0	133.9	117.4	120.1	125.8	109.6	134.4
BC	**92.6**	**100.8**	**128.6**	**122.5**	**131.2**	**142.1**	**130.3**	**144.4**	**150.3**	**153.8**	**163.6**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-5, TABLE B. TOTAL GRADUATE DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	30,066	32,889	36,759	36,930	38,388	39,819	41,328	44,037	46,806	48,378	50,553
NL	405	405	519	450	582	582	522	612	627	744	786
PE	27	24	33	33	93	57	69	78	51	111	84
NS	1,323	1,509	1,875	1,857	1,920	1,833	2,031	1,953	2,097	2,145	2,115
NB	444	462	558	576	549	549	591	639	600	621	780
QC	8,985	10,137	10,731	11,280	11,181	11,400	11,940	11,862	12,261	12,822	13,425
ON	11,862	12,909	13,905	14,385	14,550	15,144	16,575	18,165	19,872	20,733	21,090
MB	705	561	621	717	744	804	795	774	807	846	924
SK	648	687	702	498	498	498	585	972	975	1,098	756
AB	2,535	2,748	3,378	2,844	3,609	3,828	3,441	3,609	3,834	3,393	4,272
BC	**3,135**	**3,444**	**4,443**	**4,290**	**4,662**	**5,121**	**4,770**	**5,376**	**5,679**	**5,868**	**6,318**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-6 (A), TABLE A. ARCHITECTURE, ENGINEERING AND RELATED TECHNOLOGY BACHELOR DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	41.4	45.2	45.8	44.7	46.2	49.0	47.7	44.7	46.2	47.5	47.4
NL	39.5	48.4	53.9	56.0	70.0	77.8	59.4	49.8	56.7	69.0	76.7
PE	-	-	2.7	-	-	2.6	2.6	-	-	-	-
NS	33.8	42.4	39.1	42.0	46.0	48.6	51.1	52.0	57.6	53.9	53.4
NB	31.9	32.3	34.6	37.4	45.0	45.4	55.1	44.9	42.7	39.7	42.3
QC	47.1	52.6	56.4	55.6	55.3	57.5	56.0	52.3	51.2	53.7	50.4
ON	48.7	52.4	51.7	51.0	52.9	57.6	54.6	49.5	52.0	52.2	53.8
MB	24.5	24.6	28.4	25.0	27.3	25.6	30.3	25.1	31.2	30.0	26.3
SK	43.2	47.2	45.5	31.9	31.8	31.4	33.8	40.0	34.4	41.9	48.2
AB	41.2	43.6	42.6	39.0	38.4	39.3	41.1	40.2	41.1	44.4	43.4
BC	**20.6**	**21.9**	**21.8**	**21.8**	**24.8**	**26.6**	**24.5**	**27.3**	**30.4**	**31.1**	**31.0**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-6 (A), TABLE B. ARCHITECTURE, ENGINEERING AND RELATED TECHNOLOGY BACHELOR DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	10,581	11,670	12,003	11,853	12,447	13,356	13,167	12,519	13,101	13,629	13,797
NL	171	210	234	243	303	336	258	219	252	309	345
PE	-	-	3	-	-	3	3	-	-	-	-
NS	261	330	306	330	363	384	405	414	462	435	432
NB	198	201	216	234	282	285	348	285	273	255	273
QC	2,895	3,258	3,528	3,513	3,531	3,711	3,657	3,459	3,432	3,636	3,450
ON	4,764	5,208	5,226	5,229	5,502	6,057	5,817	5,334	5,679	5,772	6,027
MB	225	228	267	237	261	246	294	246	309	300	267
SK	342	375	363	255	255	255	279	336	294	363	426
AB	1,029	1,113	1,110	1,047	1,065	1,125	1,206	1,209	1,254	1,374	1,380
BC	**699**	**750**	**753**	**765**	**882**	**960**	**897**	**1,017**	**1,149**	**1,188**	**1,197**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-6 (B), TABLE A. ARCHITECTURE, ENGINEERING AND RELATED TECHNOLOGY GRADUATE DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	13.9	16.1	19.0	19.5	19.2	19.2	19.2	20.2	21.2	22.4	24.2
NL	7.6	9.0	8.3	7.6	13.9	16.0	14.5	14.3	16.2	18.1	20.0
PE	-	-	-	-	-	-	-	-	-	-	-
NS	16.3	15.4	25.7	24.8	20.9	16.7	17.0	18.1	22.8	23.1	25.2
NB	6.8	8.7	12.0	16.3	13.9	12.9	10.5	10.9	13.1	12.1	12.6
QC	16.2	20.8	24.9	28.4	27.2	24.7	26.0	25.9	24.7	27.1	29.6
ON	14.5	17.0	19.2	19.4	19.0	19.4	20.3	22.6	24.8	25.8	26.8
MB	18.6	12.0	15.0	14.9	13.2	16.2	14.6	12.3	11.8	11.7	14.5
SK	9.5	9.8	13.9	9.8	9.7	9.6	7.6	13.2	12.7	14.2	12.2
AB	14.3	15.4	21.4	16.3	18.8	24.1	20.0	20.4	20.9	20.5	24.9
BC	**9.3**	**11.1**	**10.5**	**12.3**	**11.6**	**10.5**	**10.7**	**10.5**	**11.9**	**13.6**	**15.6**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-6 (B), TABLE B. ARCHITECTURE, ENGINEERING AND RELATED TECHNOLOGY GRADUATE DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	3,540	4,161	4,986	5,187	5,163	5,223	5,304	5 664	6,012	6,426	7,056
NL	33	39	36	33	60	69	63	63	72	81	90
PE	-	-	-	-	-	-	-	-	-	-	-
NS	126	120	201	195	165	132	135	144	183	186	204
NB	42	54	75	102	87	81	66	69	84	78	81
QC	993	1,290	1,557	1,791	1,734	1,596	1,698	1,716	1,656	1,833	2,025
ON	1,422	1,695	1,941	1,989	1,977	2,046	2,157	2,436	2,712	2,856	3,006
MB	171	111	141	141	126	156	141	120	117	117	147
SK	75	78	111	78	78	78	63	111	108	123	108
AB	357	393	558	438	522	690	585	612	636	636	792
BC	**315**	**378**	**363**	**432**	**411**	**378**	**390**	**390**	**450**	**519**	**603**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-7 (A), TABLE A. MATHEMATICS, COMPUTER AND INFORMATION SCIENCES BACHELOR DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	28.5	29.1	29.5	25.9	24.2	21.3	18.8	16.2	14.3	14.0	14.3
NL	16.6	18.7	14.5	19.4	15.3	15.3	13.1	13.0	10.1	11.4	11.3
PE	13.5	10.7	13.3	15.9	7.9	7.9	15.6	15.4	12.7	22.3	17.2
NS	29.9	37.0	38.3	41.6	33.4	24.3	25.0	23.3	18.0	17.9	16.0
NB	30.5	28.4	29.3	28.3	21.5	18.1	16.2	12.8	12.2	11.7	12.6
QC	17.9	16.4	14.7	12.7	11.7	9.5	10.2	7.8	7.6	7.4	7.6
ON	38.1	40.1	42.2	34.7	33.6	30.2	27.1	22.4	19.5	19.1	19.4
MB	16.0	14.9	19.5	15.8	17.0	14.0	17.3	12.9	12.4	12.9	13.0
SK	30.7	24.6	25.5	13.9	13.8	13.7	7.6	8.2	5.6	4.8	8.5
AB	19.9	23.2	24.2	26.3	22.1	20.1	15.5	14.0	13.5	12.6	12.6
BC	**30.8**	**30.5**	**28.5**	**26.8**	**25.2**	**22.4**	**15.6**	**17.7**	**15.0**	**14.2**	**15.1**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-7 (A), TABLE B. MATHEMATICS, COMPUTER AND INFORMATION SCIENCES BACHELOR DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	7,263	7,518	7,737	6,885	6,504	5,799	5,187	4,548	4,071	4,017	4,164
NL	72	81	63	84	66	66	57	57	45	51	51
PE	15	12	15	18	9	9	18	18	15	27	21
NS	231	288	300	327	264	192	198	186	144	144	129
NB	189	177	183	177	135	114	102	81	78	75	81
QC	1,101	1,014	918	801	744	612	666	519	507	501	522
ON	3,723	3,984	4,260	3,558	3,498	3,174	2,889	2,412	2,133	2,115	2,172
MB	147	138	183	150	162	135	168	126	123	129	132
SK	243	195	204	111	111	111	63	69	48	42	75
AB	498	591	630	705	612	576	453	420	411	390	399
BC	**1,044**	**1,041**	**984**	**939**	**897**	**807**	**570**	**660**	**567**	**540**	**585**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-7 (B), TABLE A. MATHEMATICS, COMPUTER AND INFORMATION SCIENCES GRADUATE DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	6.3	7.0	8.4	8.6	8.7	8.3	8.3	8.4	8.8	9.1	9.1
NL	2.1	2.8	2.1	1.4	5.5	4.9	5.5	4.1	4.0	4.0	4.0
PE	-	-	-	-	-	-	-	-	-	-	-
NS	9.7	11.6	14.2	18.3	16.0	12.2	12.9	13.6	11.2	12.3	13.4
NB	2.9	4.3	2.4	6.2	5.3	6.2	4.3	4.7	3.8	4.2	4.7
QC	7.2	8.1	9.3	9.5	9.4	8.8	8.6	8.2	7.8	8.7	8.5
ON	7.0	7.5	9.2	9.8	9.4	9.1	10.0	9.8	11.3	11.3	11.0
MB	1.6	2.3	2.6	2.9	2.8	3.1	2.5	2.1	2.4	2.1	3.2
SK	3.4	3.0	4.9	2.3	2.2	2.2	2.5	5.0	5.3	4.5	4.1
AB	5.4	6.1	8.7	7.2	9.2	8.2	7.7	8.2	6.9	7.1	7.7
BC	**5.8**	**6.9**	**7.7**	**7.8**	**7.9**	**8.6**	**6.9**	**7.6**	**9.0**	**8.8**	**9.8**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-7 (B), TABLE B. MATHEMATICS, COMPUTER AND INFORMATION SCIENCES GRADUATE DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	1,608	1,815	2,199	2,295	2,343	2,271	2,304	2,346	2,499	2,601	2,661
NL	9	12	9	6	24	21	24	18	18	18	18
PE	-	-	-	-	-	-	-	-	-	-	-
NS	75	90	111	144	126	96	102	108	90	99	108
NB	18	27	15	39	33	39	27	30	24	27	30
QC	444	504	579	597	597	567	564	543	522	588	579
ON	684	744	930	1,005	981	957	1,062	1,056	1,230	1,254	1,233
MB	15	21	24	27	27	30	24	21	24	21	33
SK	27	24	39	18	18	18	21	42	45	39	36
AB	135	156	228	192	255	234	225	246	210	219	246
BC	**195**	**237**	**267**	**273**	**282**	**309**	**252**	**282**	**339**	**336**	**378**

- Not available or zero

* 2012 is the latest year for which information is available.

Source: Statistics Canada

INDICATOR E-8 (A), TABLE A. PHYSICAL AND LIFE SCIENCES BACHELOR DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	44.8	45.2	44.0	47.3	50.6	56.5	53.4	53.3	50.6	51.6	52.0
NL	59.6	56.1	55.9	52.5	58.9	60.4	55.2	56.7	62.1	56.3	54.7
PE	48.7	64.5	85.3	92.5	78.9	78.7	96.1	59.1	60.7	59.6	71.2
NS	77.3	84.1	84.3	89.7	98.4	105.6	88.2	86.6	86.8	87.8	93.1
NB	42.6	43.9	45.2	42.7	46.9	43.5	52.3	40.1	38.9	37.8	38.6
QC	33.1	28.9	30.3	30.4	30.3	28.3	28.5	27.4	26.3	25.5	25.2
ON	49.7	51.8	51.4	54.8	58.0	75.0	69.6	70.5	64.4	66.4	66.7
MB	49.2	54.3	51.8	53.8	56.9	53.1	63.2	54.3	55.2	54.6	60.3
SK	30.7	34.8	31.6	24.4	24.3	24.0	32.4	50.4	35.1	39.5	36.0
AB	46.7	47.3	32.8	48.8	55.6	57.6	54.3	50.2	51.4	47.7	52.9
BC	**45.1**	**43.7**	**45.0**	**48.3**	**55.0**	**52.3**	**44.3**	**48.6**	**49.1**	**55.7**	**51.3**

* 2012 is the latest year for which information is available.

Source: Statistics Canada

INDICATOR E-8 (A), TABLE B. PHYSICAL AND LIFE SCIENCES BACHELOR DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	11,448	11,670	11,514	12,546	13,626	15,408	14,748	14,940	14,352	14,829	15,135
NL	258	243	243	228	255	261	240	249	276	252	246
PE	54	72	96	105	90	90	111	69	72	72	87
NS	597	654	660	705	777	834	699	690	696	708	753
NB	264	273	282	267	294	273	330	255	249	243	249
QC	2,034	1,791	1,896	1,917	1,932	1,827	1,860	1,815	1,761	1,725	1,725
ON	4,857	5,154	5,193	5,619	6,039	7,890	7,413	7,599	7,029	7,344	7,482
MB	453	504	486	510	543	510	612	531	546	546	612
SK	243	276	252	195	195	195	267	423	300	342	318
AB	1,167	1,206	855	1,311	1,542	1,647	1,593	1,509	1,566	1,476	1,680
BC	**1,527**	**1,494**	**1,554**	**1,692**	**1,956**	**1,884**	**1,623**	**1,809**	**1,854**	**2,124**	**1,980**

* 2012 is the latest year for which information is available.

Source: Statistics Canada

INDICATOR E-8 (B), TABLE A. PHYSICAL AND LIFE SCIENCES GRADUATE DEGREES AWARDED PER 100,000 PERSONS AGED 15 YEARS AND OLDER*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	11.9	12.4	12.9	12.8	13.7	13.9	14.2	14.9	15.6	15.4	16.2
NL	7.6	8.3	9.7	11.8	12.5	10.4	11.0	17.1	13.5	16.1	22.0
PE	-	-	-	-	-	-	-	-	-	7.4	12.3
NS	10.9	12.3	14.6	16.0	18.2	17.9	15.1	15.4	18.0	16.4	18.2
NB	5.3	6.3	8.2	9.1	8.1	8.6	8.6	6.6	7.0	7.9	10.2
QC	16.7	18.1	18.8	19.0	18.8	19.3	19.5	19.4	19.6	18.8	19.7
ON	11.9	12.0	12.7	12.4	13.6	13.7	14.4	15.8	17.0	17.3	17.8
MB	9.5	7.1	8.6	8.9	9.4	8.7	7.7	8.9	8.8	8.4	8.3
SK	9.1	8.3	7.1	5.6	5.6	5.5	8.0	10.7	8.8	10.7	8.5
AB	9.5	10.7	7.5	8.0	11.2	11.9	12.4	11.9	12.6	11.2	12.4
BC	**9.0**	**9.5**	**10.6**	**9.7**	**10.4**	**10.7**	**10.5**	**11.4**	**11.7**	**11.6**	**12.7**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-8 (B), TABLE B. PHYSICAL AND LIFE SCIENCES GRADUATE DEGREES AWARDED*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	3,030	3,216	3,366	3,393	3,684	3,786	3,927	4,179	4,419	4,410	4,707
NL	33	36	42	51	54	45	48	75	60	72	99
PE	-	-	-	-	-	-	-	6	6	9	15
NS	84	96	114	126	144	141	120	123	144	132	147
NB	33	39	51	57	51	54	54	42	45	51	66
QC	1,023	1,119	1,176	1,197	1,197	1,248	1,272	1,281	1,314	1,275	1,347
ON	1,161	1,191	1,287	1,275	1,419	1,446	1,539	1,698	1,854	1,908	1,995
MB	87	66	81	84	90	84	75	87	87	84	84
SK	72	66	57	45	45	45	66	90	75	93	75
AB	237	273	195	216	312	339	363	357	384	348	393
BC	**303**	**324**	**366**	**339**	**369**	**387**	**384**	**423**	**441**	**441**	**489**

- Not available or zero
* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-9. PERCENTAGE OF HOUSEHOLDS WITH HOME COMPUTERS*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	64.1	66.6	68.7	72.0	75.4	78.4	79.4	81.7	82.7	84.5	84.1
NL	50.6	51.3	55.2	60.8	66.0	65.9	69.9	71.5	77.4	76.5	81.6
PE	52.3	57.3	63.3	65.6	69.2	72.2	71.9	79.0	77.7	75.7	79.0
NS	57.7	61.1	63.5	66.8	71.0	73.0	75.4	79.6	79.7	79.9	82.6
NB	49.3	53.2	57.9	61.8	67.7	70.0	72.5	74.4	74.5	78.7	80.4
QC	56.8	59.2	61.4	65.7	69.2	70.9	74.2	76.0	78.5	80.0	81.7
ON	68.4	71.7	72.6	75.8	78.3	82.7	81.1	84.5	83.7	85.7	84.9
MB	56.4	60.5	65.1	65.5	69.5	74.6	74.6	79.9	79.0	80.1	81.5
SK	57.5	60.3	63.3	68.9	68.8	72.3	77.0	79.6	78.8	82.4	81.2
AB	70.4	72.3	73.5	76.8	83.4	82.9	85.6	86.2	88.3	90.7	88.9
BC	**71.4**	**71.9**	**75.2**	**76.8**	**79.9**	**84.1**	**85.0**	**84.9**	**88.0**	**89.0**	**84.8**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-10. PERCENTAGE OF HOUSEHOLDS USING THE INTERNET (%)*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	54.5	56.9	59.8	64.3	68.1	72.7	74.6	77.8	78.4	80.5	81.5
NL	39.9	40.3	44.6	52.1	57.9	60.2	65.5	68.1	72.3	72.6	78.4
PE	42.3	48.9	51.5	58.0	62.3	64.7	67.9	73.7	72.8	72.7	75.0
NS	47.9	52.4	55.4	59.3	63.6	66.5	69.9	73.7	75.1	76.5	80.2
NB	41.6	44.7	47.1	52.7	58.4	62.9	65.4	69.4	69.2	72.6	76.6
QC	46.1	47.8	50.0	55.5	59.8	63.6	67.1	71.2	73.3	74.3	77.4
ON	58.9	63.0	65.0	69.4	72.0	78.1	77.4	80.7	80.2	82.4	82.6
MB	47.0	50.0	54.6	57.6	60.6	66.2	67.3	76.0	74.0	76.5	78.9
SK	48.0	51.3	54.7	61.7	61.0	66.2	72.7	74.4	73.7	78.8	79.2
AB	60.5	61.2	66.0	69.2	76.5	77.9	81.3	82.9	84.2	87.3	87.3
BC	**63.6**	**63.2**	**67.5**	**70.5**	**74.2**	**79.3**	**82.1**	**83.2**	**83.7**	**86.2**	**84.3**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-11. GROSS INCOME FROM TECHNOLOGY LICENSES AT U-15 UNIVERSITIES (IN $ THOUSANDS CDN)

INSTITUTION	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dalhousie U	-	25	-	149	298	519	620	533	617	576	608	239
U of Toronto	1,559	2,733	2,928	1,578	1,486	1,917	2,045	8,234	2,168	2,694	5,659	3,065
U of Ottawa	52	60	255	112	341	279	911	-	403	291	398	288
McMaster U	731	887	976	1,528	1,444	1,512	950	1,325	1,038	1,250	2,117	2,445
U of Western Ont.	811	394	1,089	4,187	4,791	3,960	4,009	4,223	4,529	4,253	4,241	5,514
Queens U	4,373	4,874	6,169	895	3,500	2,071	1,266	2,416	1,467	1,878	1,495	-
U of Waterloo	813	827	811	778	562	451	807	425	390	323	706	576
U of Montreal	522	826	1,725	-	1,123	836	792	493	1,076	1,128	5,080	4,070
McGill U	1,529	2,028	1,507	1,580	1,487	1,567	2,574	875	1,197	952	844	859
U Laval	229	153	280	352	-	1,360	1,514	2,032	2,542	1,501	1,337	1,463
U of Manitoba	2,458	2,358	2,178	1,677	2,843	2,226	1,759	2,139	2,058	2,228	1,606	2,085
U of Saskatchewan	959	1,233	1,178	1,091	1,303	1,252	2,214	5,593	6,533	6,865	8,787	10,338
U of Alberta	2,109	1,497	1,091	1,054	1,136	1,771	2,030	873	889	3,651	888	783
U of Calgary	2,702	4,095	3,309	3,434	4,409	4,991	4,934	5,674	6,217	5,097	5,556	3,808
U of BC	**11,676**	**13,494**	**13,738**	**15,728**	**15,716**	**13,431**	**6,444**	**5,580**	**5,502**	**8,441**	**7,622**	**5,124**

Note: The University of Western Ontario includes Lawson Health Research Institute and Robarts Research Institute.
McMaster University includes Hamilton Health Science and St. Joseph's Healthcare Hamilton.
The University of Calgary includes UTI incorporated.
- Not available or zero
Source: Association of University Technology Managers

LICENSES AND OPTIONS YIELDING INCOME AT CANADIAN U-15 UNIVERSITIES (ACTUAL)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dalhousie U	-	5	-	4	4	5	5	5	4	4	7	7
U of Toronto	21	45	32	53	55	58	53	53	63	58	60	51
U of Ottawa	5	5	9	8	11	10	9	7	12	9	9	7
McMaster U	43	55	59	86	78	100	110	110	91	109	159	176
U of Western Ont.	46	17	31	41	46	52	43	56	47	56	43	54
Queens U	29	31	35	43	42	37	37	41	43	43	38	-
U of Waterloo	30	22	37	28	16	11	14	18	8	8	7	9
U of Montreal	31	19	23	-	25	20	13	39	43	45	61	54
McGill U	40	43	79	54	69	90	77	81	67	97	76	57
U Laval	10	12	16	18	-	19	35	37	48	44	51	62
U of Manitoba	29	26	31	22	30	38	24	33	42	45	54	42
U of Saskatchewan	65	88	73	72	74	69	80	80	115	78	102	113
U of Alberta	40	42	46	32	49	49	53	40	49	42	47	46
U of Calgary	73	85	86	31	67	51	48	33	15	44	13	40
U of BC	**73**	**65**	**90**	**91**	**90**	**98**	**77**	**112**	**103**	**116**	**93**	**85**

Note: The University of Western Ontario includes Lawson Health Research Institute and Robarts Research Institute.
McMaster University includes Hamilton Health Science and St. Joseph's Healthcare Hamilton.
The University of Calgary includes UTI incorporated.
- Not available or zero
Source: Association of University Technology Managers

GROSS INCOME PER TECHNOLOGY LICENSE AT U-15 UNIVERSITIES (IN $ THOUSANDS CDN)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dalhousie U	-	5	-	37	75	104	124	107	154	144	87	34
U of Toronto	74	61	92	30	27	33	39	155	34	46	94	60
U of Ottawa	10	12	28	14	31	28	101	-	34	32	44	41
McMaster U	17	16	17	18	19	15	9	12	11	11	13	14
U of Western Ont.	18	23	35	102	104	76	93	75	96	76	99	102
Queens U	151	157	176	21	83	56	34	59	34	44	39	-
U of Waterloo	27	38	22	28	35	41	58	24	49	40	101	64
U of Montreal	17	43	75	-	45	42	61	13	25	25	83	75
McGill U	38	47	19	29	22	17	33	11	18	10	11	15
U Laval	23	13	18	20	-	72	43	55	53	34	26	24
U of Manitoba	85	91	70	76	95	59	73	65	49	50	30	50
U of Saskatchewan	15	14	16	15	18	18	28	70	57	88	86	91
U of Alberta	53	36	24	33	23	36	38	22	18	87	19	17
U of Calgary	37	48	38	111	66	98	103	172	414	116	427	95
U of BC	**160**	**208**	**153**	**173**	**175**	**137**	**84**	**50**	**53**	**73**	**82**	**60**

Note: The University of Western Ontario includes Lawson Health Research Institute and Robarts Research Institute.
McMaster University includes Hamilton Health Science and St. Joseph's Healthcare Hamilton.
The University of Calgary includes UTI incorporated.
- Not available or zero
Source: Association of University Technology Managers

INDICATOR E-12. NUMBER OF U.S. PATENTS ISSUED TO U-15 UNIVERSITIES (ACTUAL)

INSTITUTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2009-2013
Dalhousie U	7	-	1	-	-	-	-	-	3	-	3	6
U of Toronto	3	4	8	15	16	15	7	14	22	13	10	66
U of Ottawa	4	5	3	6	8	3	7	2	9	8	13	39
McMaster U	3	7	2	2	6	3	10	4	3	5	5	27
U of Western Ont.	4	7	8	8	3	6	3	10	10	6	7	36
Queens U	14	7	8	6	10	9	9	8	10	10	-	37
U of Waterloo	6	-	-	1	-	1	1	2	2	1	4	10
U of Montreal	11	4	-	1	4	4	9	6	19	14	19	67
McGill U	45	30	10	15	19	8	12	17	10	22	19	80
U of Laval	8	11	3	-	20	4	6	9	7	7	10	39
U of Manitoba	5	6	8	2	7	8	1	3	3	3	9	19
U of Saskatchewan	2	4	12	6	8	5	4	8	9	6	7	34
U of Alberta	11	13	10	8	9	8	8	7	7	20	16	58
U of Calgary	13	6	10	7	14	3	3	7	8	8	8	34
U of BC	**19**	**18**	**25**	**14**	**18**	**13**	**13**	**16**	**13**	**14**	**21**	**77**

Note: The University of Western Ontario includes Lawson Health Research Institute and Robarts Research Institute.
McMaster University includes Hamilton Health Science and St. Joseph's Healthcare Hamilton.
The University of Calgary includes UTI incorporated.
- Not available or zero
Source: Association of University Technology Managers

INDICATOR E-13. NUMBER OF UNIVERSITY START-UP COMPANIES FORMED (ACTUAL)

INSTITUTION	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Dalhousie	-	-	-	-	-	1	-	1	-	-	3
U of Toronto	7	5	3	1	8	7	7	18	23	17	12
U of Ottawa	1	-	1	7	5	5	1	-	6	4	5
McMaster U	-	-	2	-	-	-	-	-	1	2	2
U of Western Ont.	-	1	5	3	3	-	6	3	2	3	6
Queens U	-	6	3	1	1	-	-	1	1	1	-
U of Waterloo	13	7	2	2	2	1	5	5	4	9	11
U of Montreal	3	2	-	-	1	1	1	1	3	1	2
McGill U	5	5	1	1	1	2	1	-	1	-	1
U of Laval	3	-	-		1	1	4	-	-	2	1
U of Manitoba	-	1	-	2	2	-	2	-	-	-	-
U of Saskatchewan	3	3	-	-	1	2	-	2	1	-	-
U of Alberta	4	3	2	3	4	2	2	4	4	1	5
U of Calgary	3	-	-	-	-	1	-	2	1	1	1
U of BC	**4**	**2**	**2**	**3**	**5**	**4**	**7**	**3**	**9**	**4**	**5**

Note: The University of Western Ontario includes Lawson Health Research Institute and Robarts Research Institute.
McMaster University includes Hamilton Health Science and St. Joseph's Healthcare Hamilton.
The University of Calgary includes UTI incorporated.
- Not available or zero
Source: Association of University Technology Managers

SIMON FRASER UNIVERSITY GROSS INCOME FROM TECHNOLOGY LICENSES (IN $ '000 CDN), U.S. PATENTS ISSUED AND START-UP COMPANIES FORMED

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Technology License Income ('000)	86	152	343	183	299	338	1,523	1,527	1,382	159	1,019
US Patents Issued	4	3	10	2	2	-	2	-	5	9	10
Start-Up companies formed	4	3	1	-	3	3	-	2	-	-	1

- Not available or zero
Source: Association of University Technology Managers

UNIVERSITY OF VICTORIA GROSS INCOME FROM TECHNOLOGY LICENSES (IN $ '000 CDN), U.S. PATENTS ISSUED AND START-UP COMPANIES FORMED

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Technology License Income ('000)	130	148	124	89	154	208	258	479	533	453	102
US Patents Issued	-	4	3	5	3	1	2	5	7	4	27
Start-Up companies formed	-	-	2	1	7	6	1	-	3	1	-

-Not available or zero
Source: Association of University Technology Managers

INDICATOR E-14. RATIO OF HIGHER EDUCATION PERFORMANCE OF R&D TO GDP (%)*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	0.63	0.65	0.68	0.67	0.65	0.65	0.66	0.69	0.68	0.67	0.66
NL	0.57	0.62	0.59	0.67	0.50	0.47	0.46	0.61	0.57	0.63	0.78
PE	0.51	0.68	0.62	0.65	0.71	0.74	0.78	0.83	0.81	0.72	0.44
NS	0.80	0.87	0.86	0.92	0.97	0.96	0.96	0.97	1.00	0.96	0.98
NB	0.46	0.52	0.47	0.51	0.51	0.52	0.53	0.55	0.51	0.50	0.49
QC	0.83	0.90	0.91	0.91	0.87	0.85	0.89	0.83	0.85	0.89	0.86
ON	0.61	0.63	0.72	0.72	0.71	0.72	0.76	0.76	0.73	0.74	0.75
MB	0.60	0.63	0.64	0.69	0.62	0.61	0.60	0.65	0.64	0.61	0.55
SK	0.74	0.65	0.59	0.48	0.46	0.44	0.47	0.51	0.52	0.38	0.35
AB	0.48	0.48	0.46	0.43	0.38	0.39	0.38	0.48	0.45	0.41	0.40
BC	**0.52**	**0.53**	**0.52**	**0.52**	**0.51**	**0.55**	**0.56**	**0.59**	**0.61**	**0.57**	**0.57**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR E-15. RESEARCH GRANTS AND AWARDS FUNDED BY THE CANADIAN INSTITUTES OF HEALTH RESEARCH, UP TO FUNDING YEAR 2015/16

	# awarded	total $ amount	average $ amount	funding per capita
CANADA	45,017	12,484,645,565	277,332	$348
NL	400	64,910,341	162,276	$123
PE	77	8,214,312	106,679	$56
NS	1,263	302,939,463	239,857	$320
NB	164	16,089,953	98,109	$21
QC	12,098	3,460,545,513	286,043	$417
ON	17,688	5,270,875,237	297,992	$382
MB	1,366	312,287,228	228,611	$241
SK	1,014	162,003,503	159,767	$142
AB	4,396	1,179,085,470	268,218	$284
BC	**5,791**	**1,619,485,990**	**279,656**	**$346**

Notes: Grant and Award funding for funding year 2015/16 were approved in 2014/15.
Totals include cumulative funding from inception (2000) up to and including fiscal year 2015/16.
Canada total includes Territories.
Per capita is calculated using projected population as at July 1st, 2015.
Source: Canadian Institutes of Health Research

INDICATOR E-16 RESEARCH PROJECTS FUNDED BY THE CANADIAN FOUNDATION FOR INNOVATION, UP TO FUNDING YEAR 2013/14

	# of projects	total $ amount	average $ amount	funding per capita
TOTAL	8,835	$5,103,495,154	$577,645	$145
NL	138	$54,691,292	$396,314	$104
PE	32	$9,617,716	$300,554	$66
NS	413	$118,862,034	$287,802	$126
NB	172	$28,071,438	$163,206	$37
QC	2,276	$1,218,896,244	$535,543	$149
ON	3,257	$2,087,629,824	$640,967	$154
MB	301	$79,507,479	$264,144	$63
SK	330	$191,757,965	$581,085	$173
AB	797	$434,630,319	$545,333	$108
BC	**1,095**	**$599,697,014**	**$547,669**	**$131**

Note: Total includes sum of provinces, cumulative funding since program onset (1997) up to and including fiscal year 2013/14.
Per Capita is calculated using population as at July 1st, 2013.
Source: Canadian Foundation for Innovation

INDICATOR E-17. GRANT AND SCHOLARSHIP EXPENDITURES FUNDED BY THE NATIONAL SCIENCES AND ENGINEERING RESEARCH COUNCIL OF CANADA, 2005/06 TO 2010/11*

	2005-06	2006-07	2007-08	2008-09	2009 -10	2010-11 funding per capita, 10/11	
TOTAL	$640,346,365	$665,262,201	$732,540,041	$765,530,053	$782,060,774	$794,041,372	$23
NL	$7,632,372	$8,075,366	$8,996,368	$10,317,292	$10,702,571	$9,604,981	$19
PE	$1,001,674	$784,732	$831,686	$1,072,722	$1,135,411	$1,268,124	$9
NS	$21,616,731	$23,973,405	$23,936,724	$24,345,440	$23,039,594	$23,246,993	$25
NB	$10,569,753	$10,999,559	$11,046,898	$12,696,040	$14,103,119	$14,847,462	$20
QC	$157,904,720	$161,104,120	$172,625,124	$181,982,782	$189,041,069	$195,218,842	$25
ON	$244,559,647	$258,090,073	$284,145,661	$294,843,830	$302,272,879	$304,944,495	$23
MB	$15,536,899	$16,517,416	$19,304,977	$19,205,167	$18,469,663	$17,942,852	$15
SK	$27,862,491	$29,259,273	$33,440,635	$34,787,664	$38,222,999	$36,438,086	$35
AB	$65,638,934	$66,236,321	$71,829,578	$76,643,537	$76,751,384	$81,930,999	$22
BC	**$88,023,144**	**$90,221,938**	**$106,382,389**	**$109,635,579**	**$108,322,084**	**$108,598,538**	**$24**

Note: Total includes sum of provinces only.
* 2011 is the latest year for which information is available
Source: The National Sciences and Engineering Research Council of Canada

INDICATOR E-18. CANADA RESEARCH CHAIRS, PROVINCIAL DISTRIBUTION, 2014

	Total active Chairs	Chairholders from outside Canada	% female chairholders
TOTAL	1,696	212	28%
NL	13	0	39%
PE	5	2	40%
NS	62	11	34%
NB	23	2	30%
QC	457	57	23%
ON	658	72	28%
MB	51	6	29%
SK	36	4	22%
AB	159	20	26%
BC	**232**	**38**	**33%**

Note: Total includes sum of provinces only.
Source: Canada Research Chairs Program

12.2. Business Indicators

INDICATOR B-1. PATENTS AWARDED PER 100,000 POPULATION*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	3.86	4.07	4.57	4.64	5.18	5.51	5.49	6.22	5.82	6.75	15.34
NL	0.77	0.96	0.77	0.78	1.18	1.18	1.37	1.35	1.15	0.19	0.76
PE	0.73	0.73	0.73	2.17	0.00	1.45	1.44	0.71	0.00	0.00	2.07
NS	1.82	1.39	1.28	2.03	2.13	1.82	2.78	1.71	2.23	2.12	2.54
NB	1.33	2.00	1.73	1.34	1.34	1.34	1.61	1.73	1.73	1.19	2.51
QC	4.27	4.84	4.51	4.38	4.56	5.38	4.52	5.39	5.15	5.84	6.28
ON	4.05	3.89	4.79	4.68	5.72	5.91	6.08	6.82	6.73	8.21	8.13
MB	2.94	3.78	3.24	3.90	3.46	3.62	3.01	3.72	3.44	3.57	5.36
SK	2.61	2.51	4.91	6.14	6.15	4.19	4.62	3.87	5.90	3.75	5.24
AB	6.23	6.72	8.52	8.82	9.53	10.24	11.35	13.35	10.72	12.69	11.47
BC	**2.80**	**3.20**	**3.08**	**3.36**	**3.56**	**3.82**	**3.49**	**3.79**	**3.22**	**3.67**	**3.74**

* 2012 is the latest year for which information is available.
Source: Canadian Intellectual Property Office

INDICATOR B-2. PATENTS GRANTED AS A PERCENT OF PATENT APPLICATIONS*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	24	25	27	29	33	34	35	41	39	44	119
NL	20	24	19	20	29	38	32	39	27	7	25
PE	20	25	20	60	0	33	100	11	0	0	43
NS	29	22	24	31	38	40	33	25	30	26	45
NB	17	37	24	24	24	22	27	30	27	20	73
QC	22	27	23	24	26	32	30	37	36	40	58
ON	24	21	27	27	34	32	32	40	40	46	51
MB	31	47	37	36	35	29	41	38	34	42	63
SK	22	26	40	47	46	32	39	40	46	33	48
AB	33	30	35	38	47	46	52	64	47	56	60
BC	**20**	**23**	**22**	**26**	**28**	**31**	**30**	**28**	**28**	**38**	**42**

* 2012 is the latest year for which information is available.
Source: Canadian Intellectual Property Office

INDICATORS B-3, B-4 AND B-5. NUMBER OF ESTABLISHMENTS, ENTRIES, EXITS AND HIGH GROWTH COMPANIES

TOTAL B.C. ECONOMY

	2007	2008	2009	2010	2011	2012	2013
Establishments	172,372	175,003	176,124	175,913	173,588	175,885	183,667
Entries		19,628	20,784	18,197	16,382	22,407	26,514
Exits		16,997	19,663	18,408	18,706	20,110	18,732
High Growth Companies		980	958	1,041	1,031	1,004	1,622

HIGH TECHNOLOGY SECTOR

	2007	2008	2009	2010	2011	2012	2013
Establishments	8,644	8,832	8,903	8,885	8,757	9,010	9,738
Entries		1,311	1,307	1,196	1,113	1,682	1,923
Exits		1,123	1,236	1,214	1,241	1,429	1,195
High Growth Companies		50	46	41	64	45	124

Source: BC Stats

INDICATOR B-6. CANADIAN VENTURE CAPITAL INVESTMENT BY PROVINCE OF INVESTMENT ($ MILLIONS)*

	2014
CANADA	1,896
NL	3
PEI	0
NS	18
NB	9
QC	295
ON	932
MB	32
SK	22
AB	52
BC	**554**

* 2014 is currently the latest and only year for which information is available.
Source: Canadian Venture Capital Association

INDICATOR B-7. PROPORTIONAL SHARE OF CANADIAN VENTURE CAPITAL INVESTMENT (%)*

	2014
CANADA	100.0
NL	0.2
PEI	0.0
NS	0.9
NB	0.5
QC	15.5
ON	49.1
MB	1.7
SK	1.2
AB	2.7
BC	**29.2**

* 2014 is currently the latest and only year for which information is available.
Source: Canadian Venture Capital Association

CANADIAN VENTURE CAPITAL INVESTMENT PER CAPITA ($)*

	2014
CANADA	53.46
NL	5.69
PEI	1.03
NS	19.09
NB	11.94
QC	35.91
ON	68.13
MB	24.96
SK	19.55
AB	12.62
BC	**119.62**

* 2014 is currently the latest and only year for which information is available.
Source: Canadian Venture Capital Association

INDICATOR B-8. RATIO OF BUSINESS PERFORMANCE OF R&D TO GDP (%)*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	1.15	1.13	1.14	1.11	1.11	1.07	1.01	1.02	0.95	0.93	0.88
NL	0.13	0.17	0.15	0.39	0.38	0.30	0.29	0.35	0.23	0.22	0.29
PE	0.11	0.18	0.17	0.27	0.27	0.28	0.31	0.26	0.23	0.24	0.44
NS	0.33	0.26	0.30	0.30	0.32	0.31	0.30	0.31	0.24	0.21	0.21
NB	0.29	0.28	0.34	0.39	0.39	0.44	0.43	0.44	0.34	0.31	0.22
QC	1.67	1.61	1.59	1.49	1.66	1.60	1.53	1.51	1.45	1.41	1.31
ON	1.44	1.47	1.48	1.48	1.42	1.35	1.30	1.24	1.14	1.15	1.07
MB	0.42	0.39	0.45	0.47	0.41	0.42	0.35	0.41	0.42	0.35	0.36
SK	0.32	0.23	0.27	0.34	0.37	0.37	0.22	0.26	0.26	0.26	0.24
AB	0.52	0.51	0.59	0.54	0.58	0.56	0.55	0.64	0.57	0.60	0.62
BC	**0.78**	**0.79**	**0.82**	**0.81**	**0.73**	**0.82**	**0.83**	**0.83**	**0.80**	**0.75**	**0.70**

* 2012 is the latest year for which information is available
Source: Statistics Canada

TOTAL INTRAMURAL RESEARCH AND DEVELOPMENT EXPENDITURES BY PROVINCE, BY INDUSTRY, 2012 ($ MILLIONS)*

	ATLANTIC	QC	ON	MB	SK	AB	BC	Total
Agriculture, Forestry, Fishing, Hunting	9	36	23	4	x	x	x	95
Mining and Oil & Gas Extraction	41	22	72	x	x	868	210	1,244
Utilities	11	107	79	x	x	x	x	230
Construction	1	23	50	x	2	15	x	100
Manufacturing	76	2,573	3,650	101	74	539	422	7,434
Pharmaceutical & Medicine	x	156	243	x	x	x	40	502
Computer & Peripheral Equipment	x	12	28	x	x	x	9	53
Communications Equipment	x	103	1,336	x	x	x	27	1,483
Semiconductor & Other Electronic Components	x	69	306	x	x	x	93	481
Navigational, Measuring, Medical & Control Instruments	6	89	272	x	x	17	44	430
Other Computer & Electronic Products	x	17	x	x	x	x	x	33
Aerospace Products & Parts	1	x	302	x	x	x	5	1,455
Services	131	1,931	3,395	105	80	499	907	7,049
Information & Cultural Industries	x	246	599	x	x	78	143	1,122
Computer System Design & Related	26	403	547	16	6	42	242	1,281
Architectural, Engineering & Related	9	92	249	2	10	79	57	499
Management, Scientific & Technical Consulting	2	21	31	x	x	15	11	81
Scientific Research & Development	35	637	843	11	21	69	266	1,881
TOTAL	269	4,692	7,268	215	188	1,951	1,570	16,153

*2012 is the latest year for which information is available.
x denotes data suppression. Numbers may not add due to rounding.
Total includes Yukon, Northwest Territories and Nunavut.
Source: Statistics Canada

12.3. Government Indicators

INDICATOR G-1. INDEX OF ALL TAXES PAID BY UNATTACHED INDIVIDUALS EARNING $80,000 PER YEAR ($)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
NL	28,281	29,120	28,687	26,449	24,991	24,929	24,539	24,188	24,064	24,011	24,010
PE	25,938	26,427	25,956	24,921	24,133	24,448	24,406	24,320	24,397	24,467	24,329
NS	26,301	27,479	27,453	25,240	25,690	25,742	26,088	25,890	25,877	25,891	25,907
NB	25,115	25,377	25,482	24,897	23,506	23,177	22,997	22,778	22,670	23,661	23,572
QC	32,741	33,779	33,024	30,880	30,951	30,986	31,179	31,282	31,455	31,314	31,309
ON	25,667	25,943	25,369	24,742	24,506	24,687	24,701	24,259	24,125	24,109	24,026
MB	28,127	27,112	26,437	25,787	26,360	26,321	26,306	26,000	26,027	26,250	26,354
SK	24,825	26,041	25,952	23,212	23,302	23,472	23,289	22,951	22,815	22,818	22,866
AB	22,212	21,710	21,272	20,350	19,885	19,949	19,966	19,837	19,777	19,827	19,797
BC	**22,063**	**21,497**	**20,731**	**19,961**	**19,553**	**19,952**	**19,990**	**19,741**	**19,512**	**19,560**	**19,569**

Source: B.C. Ministry of Finance

INDICATOR G-2. SMALL BUSINESS TAX RATE (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
NL	5.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.0	4.0	3.0
PE	7.5	7.5	5.4	4.3	2.1	1.0	1.0	1.0	1.0	4.5	4.5
NS	5.0	5.0	5.0	5.0	5.0	5.0	4.5	4.0	3.5	3.0	3.0
NB	2.5	2.0	1.0	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.0
QC	8.9	8.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
ON	5.5	5.5	5.5	5.5	5.5	5.5	4.5	4.5	4.5	4.5	4.5
MB	5.0	4.5	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
SK	5.0	5.0	4.5	4.5	4.5	4.5	4.5	2.0	2.0	2.0	2.0
AB	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
BC	**4.5**	**4.5**	**4.5**	**4.5**	**2.5**	**2.5**	**2.5**	**2.5**	2.5	2.5	2.5

Source: B.C. Ministry of Finance

INDICATOR G-3. GENERAL CORPORATE INCOME TAX RATE (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
NL	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
PE	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
NS	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
NB	13.0	13.0	12.0	13.0	12.0	12.0	11.0	10.0	10.0	12.0	12.0
QC	8.9	8.9	9.9	11.4	11.4	11.9	11.9	11.9	11.9	11.9	11.9
ON	14.0	14.0	14.0	14.0	14.0	14.0	12.0	11.5	11.5	11.5	11.5
MB	15.0	15.0	14.0	14.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
SK	17.0	17.0	13.0	13.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
AB	11.5	11.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
BC	**13.5**	**12.0**	**12.0**	**12.0**	**11.0**	**10.5**	**10.0**	**10.0**	**10.0**	**11.0**	**11.0**

Source: B.C. Ministry of Finance

INDICATOR G-4. COMBINED FEDERAL AND PROVINCIAL PERFORMANCE OF R&D AS A % OF GDP*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	0.21	0.19	0.18	0.19	0.19	0.19	0.18	0.20	0.20	0.17	0.16
NL	0.22	0.15	0.14	0.15	0.12	0.11	0.08	0.10	0.08	0.06	0.05
PE	0.22	0.31	0.25	0.68	0.59	0.28	0.29	0.30	0.29	0.28	0.25
NS	0.29	0.24	0.28	0.22	0.24	0.23	0.22	0.19	0.19	0.14	0.13
NB	0.24	0.15	0.12	0.12	0.13	0.21	0.17	0.17	0.13	0.12	0.12
QC	0.20	0.17	0.17	0.19	0.18	0.15	0.16	0.15	0.13	0.11	0.10
ON	0.27	0.27	0.24	0.27	0.28	0.28	0.29	0.32	0.36	0.29	0.27
MB	0.20	0.18	0.19	0.20	0.19	0.18	0.18	0.24	0.22	0.20	0.20
SK	0.18	0.17	0.16	0.18	0.18	0.15	0.12	0.20	0.17	0.11	0.15
AB	0.13	0.11	0.12	0.11	0.11	0.10	0.09	0.10	0.09	0.08	0.08
BC	**0.08**	**0.06**	**0.07**	**0.06**	**0.06**	**0.07**	**0.06**	**0.07**	**0.05**	**0.05**	**0.05**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR G-5. TOTAL EXPENDITURES (PRIVATE AND PUBLIC SECTOR) ON R&D AS A % OF GDP*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
CANADA	1.99	1.99	2.01	1.99	1.96	1.92	1.87	1.8[illegible]	1.84	1.78	1.71
NL	0.92	0.94	0.88	1.20	1.00	0.88	0.82	1.06	0.87	0.91	1.12
PE	0.83	1.15	1.04	1.59	1.57	1.30	1.38	1.39	1.33	1.22	1.14
NS	1.43	1.37	1.45	1.44	1.54	1.50	1.48	1.48	1.42	1.31	1.32
NB	0.97	0.95	0.94	1.02	1.03	1.16	1.13	1.16	0.97	0.93	0.83
QC	2.70	2.68	2.67	2.59	2.72	2.60	2.58	2.49	2.42	2.41	2.27
ON	2.32	2.37	2.44	2.47	2.41	2.35	2.35	2.32	2.23	2.18	2.09
MB	1.22	1.19	1.28	1.37	1.22	1.22	1.13	1.30	1.29	1.16	1.11
SK	1.24	1.06	1.02	1.01	1.02	0.96	0.80	0.97	0.94	0.75	0.73
AB	1.12	1.10	1.17	1.08	1.06	1.05	1.02	1.21	1.10	1.09	1.09
BC	**1.39**	**1.38**	**1.40**	**1.39**	**1.30**	**1.44**	**1.44**	**1.49**	**1.47**	**1.38**	**1.32**

* 2012 is the latest year for which information is available.
Source: Statistics Canada

PROFILE OF THE B.C. TOTAL EXPENDITURES ON R&D ($ MILLION)*

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Business Enterprise	1,093	1,171	1,324	1,402	1,364	1,616	1,685	1,620	1,658	1,639	1,563
Higher Education & Private Non-Profit	736	784	832	904	959	1,083	1,136	1,151	1,256	1,248	1,263
Federal Govt	99	80	91	91	91	108	93	115	93	102	93
Provincial Government & Research Institutions	20	15	16	18	18	30	33	25	19	16	22

* 2012 is the latest year for which information is available.
Source: Statistics Canada

12.4. External Indicators

INDICATOR X-1. PERCENTAGE OF IMMIGRANTS AGED 25 YEARS AND OLDER WITH 16 OR MORE YEARS OF EDUCATION

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	44.8	47.3	46.9	44.9	44.9	46.3	44.1	45.9	41.4	34.8	37.7
NL	46.7	45.9	45.5	52.5	47.2	52.7	57.2	53.3	46.6	28.7	37.0
PE	38.9	52.5	51.6	40.1	36.3	37.4	33.8	31.8	37.2	30.3	36.4
NS	53.7	58.0	57.2	54.3	50.2	57.5	51.1	52.5	44.6	36.5	47.5
NB	45.5	49.6	52.4	55.8	49.3	52.5	50.2	46.7	40.4	38.4	39.4
QC	52.1	53.1	53.1	51.9	54.1	55.4	53.2	53.7	46.6	36.9	43.2
ON	44.4	47.2	46.6	43.6	43.0	44.8	43.1	46.7	42.9	37.4	37.3
MB	28.0	29.2	29.2	26.9	25.1	28.2	25.6	27.2	27.4	26.6	33.3
SK	43.0	48.3	43.9	41.6	32.8	32.5	28.5	30.7	29.9	23.3	37.9
AB	38.8	43.8	44.0	44.5	42.9	44.6	43.4	42.1	37.6	30.6	34.1
BC	**42.7**	**44.9**	**45.3**	**44.6**	**45.5**	**45.9**	**42.7**	**45.3**	**41.3**	**34.3**	**35.6**

Canada is sum of provinces (excludes Territories & unknown)
Source: Citizenship and Immigration Canada

INDICATOR X-2. MEDIAN YEARS OF SCHOOLING OF IMMIGRANTS AGED 25 YEARS AND OLDER

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	15.7	15.9	15.9	15.7	15.7	15.8	15.7	15.8	15.7	15.8	15.9
NL	16.1	15.7	15.6	16.3	16.0	16.5	16.8	16.5	16.2	15.4	15.9
PE	15.0	16.2	16.1	15.2	14.8	15.0	14.7	14.9	15.3	14.8	15.4
NS	16.3	16.5	16.4	16.4	16.3	16.5	16.3	16.4	16.2	16.3	16.4
NB	15.6	16.1	16.2	16.3	16.0	16.2	16.1	15.8	15.6	16.1	15.8
QC	16.2	16.3	16.3	16.2	16.3	16.5	16.4	16.5	16.4	16.3	16.5
ON	15.7	15.9	15.9	15.6	15.6	15.7	15.6	15.9	15.8	15.8	15.8
MB	14.1	14.4	14.4	14.4	14.3	14.3	14.2	14.4	14.6	15.0	15.2
SK	15.5	16.0	15.6	15.0	14.4	14.5	14.3	14.6	14.7	14.8	15.7
AB	15.3	15.6	15.7	15.7	15.6	15.7	15.6	15.5	15.3	15.2	15.4
BC	**15.6**	**15.7**	**15.8**	**15.7**	**15.8**	**15.8**	**15.5**	**15.8**	**15.7**	**15.7**	**15.6**

Canada is sum of provinces (excludes Territories & unknown)
Source: Citizenship and Immigration Canada

INDICATOR X-3. NET INTER-PROVINCIAL MIGRATION (NUMBER OF PERSONS) *

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
NL	-3,352	-1,683	-2,027	-3,710	-4,342	-4,067	-528	1,877	1,558	30	545	495	-2,205
PE	62	165	144	-139	-639	-849	-291	-536	60	-210	-618	-901	-957
NS	-898	510	-772	-3,041	-3,024	-4,126	-1,794	-751	612	-41	-2,866	-3,517	-2,172
NB	-1,218	-843	-760	-2,074	-3,487	-2,632	-908	-237	571	-158	-1,806	-3,290	-4,077
QC	-4,350	-1,829	-822	-4,963	-9,411	-12,865	-11,682	-7,419	-3,258	-4,763	-6,915	-10,431	-13,339
ON	5,354	637	-6,935	-11,172	-17,501	-20,047	-14,750	-15,601	-4,662	-4,007	-10,611	-13,901	-13,980
MB	-4,344	-2,875	-2,565	-7,227	-7,881	-5,500	-3,703	-3,111	-2,412	-3,517	-4,212	-5,006	-4,827
SK	-8,820	-5,141	-4,521	-9,515	-7,083	1,549	4,171	2,983	2,153	545	1,878	392	1,222
AB	26,235	11,903	10,606	34,423	45,795	33,809	15,317	13,184	-3,271	8,443	27,652	38,598	38,717
BC	**-8,556**	**-1,037**	**7,865**	**8,214**	**8,800**	**15,005**	**14,643**	**9,995**	**8,728**	**3,421**	**-2,711**	**-1,868**	**2,267**

* Dates for this indicator are in Census years, such that '2014' refers to the July 1st, 2013 to June 30th, 2014 period.
Source: Statistics Canada

INDICATOR X-4. VALUE OF HIGH TECHNOLOGY IMPORTS TO B.C. BY COMMODITY TYPE ($ MILLION)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Biotechnology	46.8	34.3	35.3	43.8	59.9	84.9	100.9	134.4	153.1	164.1	215.7
Life Sciences	462.8	455.6	475.2	496.7	506.0	603.5	602.3	684.0	671.1	726.9	729.8
Opto-Electronics	106.3	123.5	205.1	299.6	337.9	403.7	285.7	347.9	328.3	279.9	263.3
Computers & Telecommunications	2,254.7	2,394.1	2,425.3	2,359.8	2,750.2	2,816.7	2,346.9	2,875.4	3,160.6	3,123.2	3,173.7
Electronics	173.9	140.5	245.6	253.2	253.6	278.3	269.7	364.4	358.6	311.1	374.1
Computer Integrated Manufacturing	205.2	188.5	181.8	195.8	159.6	149.2	143.7	172.7	211.8	198.5	189.9
Material Design	20.0	26.6	17.1	24.3	18.0	29.1	21.4	26.5	35.4	37.9	39.2
Aerospace	449.4	361.5	590.9	385.3	537.2	588.4	453.3	429.4	438.8	466.8	547.6
Weapons and Nuclear	31.7	39.5	15.3	19.7	16.8	18.4	20.0	19.3	25.6	22.1	21.9
Total	**3,750.7**	**3,764.1**	**4,191.7**	**4,078.2**	**4,639.3**	**4,971.9**	**4,244.0**	**5,054.0**	**5,383.5**	**5,330.6**	**5,555.1**

Source: BC Stats

12.5. Labour Indicators

INDICATOR L-1. UNEMPLOYMENT RATE FOR NATURAL AND APPLIED SCIENCE OCCUPATIONS (%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CANADA	3.8	2.9	2.6	3.0	2.9	4.6	3.6	3.0	3.3	3.2	3.1
NL	6.7	9.5	5.1	5.8	8.0	6.0	6.4	5.1	5.5	5.4	5.2
PE	11.4	5.0	4.4	5.1	5.9	5.9	4.7	6.8	6.5	7.0	6.7
NS	4.2	5.0	4.5	3.1	3.3	5.5	5.0	5.0	4.6	5.2	3.3
NB	4.2	5.5	4.4	2.8	3.7	3.5	3.7	2.8	5.2	5.9	3.8
QC	4.5	3.5	3.7	3.0	3.7	4.5	3.5	2.6	3.1	3.6	3.9
ON	3.3	2.7	2.2	3.5	3.1	4.9	3.7	3.3	3.4	3.1	2.9
MB	1.9	-	2.5	1.8	1.7	2.4	3.0	1.7	2.4	2.2	2.2
SK	-	-	2.2	-	2.2	2.3	2.4	1.9	2.9	2.1	-
AB	3.5	1.6	1.8	2.0	1.5	4.3	3.7	2.4	2.5	2.1	2.2
BC	**4.9**	**2.9**	**2.3**	**2.3**	**2.0**	**5.2**	**3.6**	**2.7**	**3.8**	**3.5**	**3.0**

- Data not available
Source: Statistics Canada

INDICATOR L-2. FTE RESEARCH WORKFORCE PER 100,000 POPULATION, 2011 AND 2012*

	Federal		Provincial		Business		Higher education		TOTAL	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
CANADA	49	47	8	8	424	380	204	205	689	644
NL	32	32	0	0	139	118	225	230	396	380
PE	62	62	21	21	139	179	139	131	361	392
NS	53	43	0	0	129	104	204	204	385	351
NB	32	30	4	4	154	115	161	144	351	292
QC	33	27	10	10	585	531	247	247	875	816
ON	79	77	4	4	502	456	197	208	782	745
MB	60	60	9	8	153	143	177	172	399	383
SK	47	61	25	26	170	143	191	194	433	425
AB	22	21	22	23	240	200	233	192	518	435
BC	**16**	**15**	**3**	**3**	**357**	**311**	**172**	**190**	**548**	**519**

FTE: full time equivalent position
* 2012 is the latest year for which information is available.
Source: Statistics Canada

STRUCTURE OF THE RESEARCH WORKFORCE BY SECTOR IN 2012 (%)*

	Federal	Provincial	Business	Higher education	Total FTE
CANADA	7.3	1.2	59.0	31.8	223,930
NL	8.5	0.0	31.0	60.5	2,000
PE	15.8	5.3	45.6	33.3	570
NS	12.3	0.0	29.5	58.1	3,320
NB	10.4	1.4	39.4	49.3	2,210
QC	3.4	1.2	65.1	30.3	65,970
ON	10.3	0.5	61.3	28.0	99,900
MB	15.7	2.1	37.4	44.9	4,790
SK	14.3	6.1	33.8	45.7	4,620
AB	4.7	5.2	45.9	44.1	16,920
BC	**2.9**	**0.6**	**59.9**	**36.6**	**23,580**

FTE: full time equivalent position
*2012 is the latest year for which information is available.
Source: Statistics Canada

INDICATOR L-3. QUALITY OF LIFE INDEX SCORES, 2015 (NEW YORK = 100)

	Global Rank	Americas Rank
Vancouver	**5**	**1**
Toronto	15	2
Ottawa	16	3
Montreal	24	4
San Francisco	27	5
Calgary	33	6
Boston	34	7
Honolulu	36	8
Chicago	43	9
Seattle	44	10
New York City	44	10

Source: Mercer Human Resource Consulting

INDICATOR L-4. ALL ITEMS INTER-CITY RETAIL PRICE INDEX (UNITS)

	Oct-03	Oct-04	Oct-05	Oct-06	Oct-07	Oct-08	Oct-09	Oct-10	Oct-11	Oct-12	Oct-13
Montreal	93	93	93	93	95	95	95	95	93	93	93
Charlottetown	93	93	94	94	94	95	97	93	93	94	95
Winnipeg	91	92	92	92	94	94	94	93	93	93	95
Saint John	92	93	93	92	96	95	96	94	94	94	96
St.John's	96	95	95	93	98	97	96	95	94	95	98
Regina	90	92	92	93	93	95	97	94	95	97	99
Halifax	97	98	98	99	99	99	98	99	100	100	100
Edmonton	97	97	97	97	98	101	102	99	99	99	100
Ottawa	103	103	103	102	102	103	103	103	102	102	102
Vancouver	**103**	**102**	**102**	**104**	**103**	**101**	**101**	**103**	**105**	**105**	**104**
Toronto	110	110	110	109	107	107	107	107	107	107	108

Note: This index measures only the price differences for a specific basket of goods, which may or may not be representative of the overall cost of living for each specific city.
Source: Statistics Canada

12.6. Post-Secondary Outcomes

DACSO SURVEY: ELIGIBLE PARTICIPANTS AND RESPONSE RATES FOR PROGRAM AREA GRADUATES

Program	Eligible Graduates	Graduate Respondents	Response Rate
High Tech Program	**7,341**	**4,777**	**65%**
Physical and Life Sciences	254	178	70%
Computer and Information Sciences	1,869	1,201	64%
Engineering and Related Technologies	4,076	2,684	66%
Health and Clinical Sciences	1,142	714	63%

Source: BC Student Outcomes, DACSO Survey

BGS SURVEY: ELIGIBLE PARTICIPANTS AND RESPONSE RATES FOR PROGRAM AREA GRADUATES

Program	Eligible Graduates	Graduate Respondents	Response Rate
High Tech Program	**10,035**	**5,129**	**51%**
Physical and Life Sciences	5,225	2,615	50%
Computer and Information Sciences	1,806	964	53%
Engineering and Related Technologies	3,004	1,550	52%

Source: BC Student Outcomes, Baccalaureate Graduates Survey

DACSO HIGH TECHNOLOGY PROGRAMS

High Technology Programs	Percent of Graduates
Engineering Technology	55%
Computer and Information Sciences and Support Services	23%
Health Services and Health Sciences	15%
Science Technologies/Technicians	3%
Library Science	2%
Other	2%

Note: N = 4,777
Source: BC Student Outcomes, DACSO Survey

BGS HIGH TECHNOLOGY PROGRAMS

High Technology Programs	Percent of Graduates
Biological Science and Life Sciences	40%
Engineering	25%
Computer and Information Sciences	14%
Physical Sciences	11%
Engineering Technologies/Technicians	5%
Mathematics and Statistics	4%
Multi/Interdisciplinary Studies	0.2%

Note: N = 5,129
Source: BC Student Outcomes, Baccalaureate Graduates Survey

INDICATORS O-1, O-2, O-3 AND O-4 (A). EDUCATIONAL CHARACTERISTICS OF DACSO GRADUATES OF HIGH TECHNOLOGY PROGRAMS

Characteristics	Physical & Life Sciences	Computer & Information Sciences	Engineering & Related Technologies	Health & Clinical Sciences
Satisfaction with education	95%	91%	94%	94%
Quality of instruction	96%	95%	95%	93%
Further studies since graduation	61%	29%	34%	17%
Current activity:				
Studying	29%	7%	16%	1%
Studying and working	28%	14%	13%	12%
Working	37%	67%	61%	84%
Neither studying nor working	6%	11%	10%	3%

Note: In the DACSO Survey, respondents were asked to rate quality of instruction using a 5-point scale: very good, good, adequate, poor, and very poor. Percentages presented for DACSO quality of instruction include the response categories: very good, good, and adequate.
Source: BC Student Outcomes, DACSO Survey

INDICATORS O-1, O-2, O3 AND O-4 (B). EDUCATIONAL CHARACTERISTICS OF BACCALAUREATE GRADUATES OF HIGH TECHNOLOGY PROGRAMS

Characteristics	Physical & Life Sciences	Computer & Information Sciences	Engineering& Related Technologies
Satisfaction with education	92%	91%	94%
Quality of instruction	93%	90%	92%
Further studies since graduation	74%	42%	35%
Current activity:			
Studying	36%	8%	9%
Studying and working	19%	12%	9%
Working	37%	73%	76%
Neither studying nor working	8%	8%	5%

Note: In the BGS Survey, respondents were asked to rate quality of instruction using a 4-point scale: very good, good, poor, and very poor. Percentages presented for BGS quality of instruction include two response categories: very good and good.
Source: BC Student Outcomes, Baccalaureate Graduates Survey

INDICATORS O-5, O-6, O-7, O-8 AND O-9 (A). LABOUR FORCE CHARACTERISTICS OF DACSO GRADUATES OF HIGH TECHNOLOGY PROGRAMS

Characteristics	Physical & Life Sciences	Computer & Information Sciences	Engineering& Related Technologies	Health & Clinical Sciences
Unemployment rate:	13.5%	12.0%	11.3%	2.6%
Works for employer:*	98%	91%	95%	99%
Full time employment:*	79%	83%	91%	71%
Job related to training:*	70%	76%	83%	93%

* Of those respondents who indicated they were employed.
Source: BC Student Outcomes, DACSO Survey

INDICATORS O-5, O-6, O-7, O-8 AND O-9 (B). LABOUR FORCE CHARACTERISTICS OF BACCALAUREATE GRADUATES OF HIGH TECHNOLOGY PROGRAMS

Characteristics	Physical & Life Sciences	Computer & Information Sciences	Engineering& Related Technologies
Unemployment rate:	13.4%	7.0%	7.0%
Works for employer:*	97%	94%	96%
Full time employment:**	75%	89%	96%
Job related to training:**	54%	76%	85%

*Of those respondents who indicated they were employed. **Of employed respondents; reported for main job.
Note: In the DACSO Survey, respondents were asked if they were paid workers or self-employed in their main job. In the BGS Survey, respondents were asked if they were paid workers, self-employed, or both a paid worker and self-employed. Percentages presented for the BGS Survey represent the percentage of respondents who indicated they were a paid worker and those who indicated they were both a paid worker and self-employed.
Source: BC Student Outcomes, Baccalaureate Graduates Survey

INDICATOR O-10 (A). TOP FIVE OCCUPATIONS OF DACSO GRADUATES OF HIGH TECHNOLOGY PROGRAMS

Top 5 Occupations	Physical & Life Sciences	Computer & Information Sciences	Engineering & Related Technologies	Health & Clinical Sciences
1	Technical Occupations in Physical Sciences - 37%	Technical Occupations in Computer & Info Systems - 28%	Technical Occupations in Architecture, Drafting, Survey & Mapping - 19%	Medical Technologists & Technicians - 91%
2	Technical Occupations in Life Sciences - 11%	Computer and Info. Systems Professionals - 23%	Tech. Occupations in Civil, Mechanical & Industrial Engineering - 15%	Retail Salespersons & Sales Clerks - 1%
3	Medical Technologists & Technicians - 9%	Creative Designers and Craftpersons - 8%	Computer & Info Sytems Professionals - 8%	Clerical Occupations General Office Skills - 1%
4	Retail Salespersons & Sales Clerks - 5%	Technical Occupations in Libraries, Archives, etc. - 4%	Technical Occupations in Electronics & Electrical Engineering - 8%	Assisting Occupations in Support of Health Services - 1%
5	University Professors & Assistants - 4%	Library, Correspondence & Info Clerks - 4%	Technical Occupations in Computer & Info Systems - 6%	n/a

Source: BC Student Outcomes, DACSO Survey

INDICATOR O-10 (B). TOP FIVE OCCUPATIONS OF BACCALAUREATE GRADUATES OF HIGH TECHNOLOGY PROGRAMS

	High Technology Program		
Top 5 Occupations	Physical & Life Sciences	Computer & Information Sciences	Engineering & Related Technologies
1	University Professors & Assistants - 11%	Computer and Info. Systems Professionals - 52%	Civil, Mechanical, Electrical & Chemical Engineers - 46%
2	Secondary & Elementary School Teachers & Counsellors - 7%	Technical Occupations in Computer & Info Systems - 9%	Computer and Info. Systems Professionals - 14%
3	Technical Occupations in Life Sciences - 7%	Secondary & Elementary School Teachers & Counsellors - 4%	Other Engineers - 12%
4	Technical Occupations in Physical Sciences - 6%	University Professors & Assistants - 3%	Managers in Construction & Transportation - 2%
5	Physical Science Professionals - 5%	Creative Designers & Craftpersons - 2%	Technical Occupations in Architecture, Drafting, Surveying & Mapping - 2%

Source: BC Student Outcomes, Baccalaureate Graduates Survey

INDICATORS O-11, O-12 AND O-13 (A). LABOUR FORCE CHARACTERISTICS OF DACSO GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

Characteristics	Employed in High Technology Occupations	Not Employed in High Technology Occupations
Works for employer:*	95%	95%
Full-time employment:*	86%	76%
Job related to training:*	93%	77%

* Of those respondents who indicated they were employed; reported for main job
Source: BC Student Outcomes, DACSO Survey

INDICATORS O-11, O-12 AND O-13 (B). LABOUR FORCE CHARACTERISTICS OF BACCALAUREATE GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

CHARACTERISTICS	Employed in High Technology Occupations	Not Employed in High Technology Occupations
Works for employer:*	95%	95%
Full-time employment:**	96%	87%
Job related to training:**	85%	73%

* Of those respondents who indicated they were employed. **Of employed respondents; reported for main job.
Note: In the DACSO Survey, respondents were asked if they were paid workers or self-employed in their main job. In the BGS Survey, respondents were asked if they were paid workers, self-employed, or both a paid worker and self-employed. Percentages presented for the BGS Survey represent the percentage of respondents who indicated they were a paid worker and those who indicated they were both a paid worker and self-employed.
Source: BC Student Outcomes, Baccalaureate Graduates Survey

INDICATOR O-14 (A). INCOME FOR DACSO GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

	Median Hourly Wage
Not employed in High Technology Occupations	$19
Employed in High Technology Occupations	$25
Top 3 High Technology Occupations:	
Medical Technologists and Technicians (excl. Dental)	$26
Computer and Information Systems Professionals	$23
Technical Occupations in Electronics and Electrical Engineering	$22

Note: Results presented are for those graduates who were employed at the time they were surveyed; reported for main job
Source: BC Student Outcomes, DACSO Survey

INDICATOR O-14 (B). INCOME FOR BACCALAUREATE GRADUATES EMPLOYED IN HIGH TECHNOLOGY OCCUPATIONS

	Median Annual Income
Not employed in High Technology Occupations	$44,200
Employed in High Technology Occupations	$57,000
Top 3 High Technology Occupations:	
Computer and Information Systems Professionals	$59,870
Civil, Mechanical, Electrical, and Chemical Engineers	$65,000
Technical Occupations in Physical Sciences	$42,000

Note: Results presented are for those graduates who were employed at the time they were surveyed; reported for main job
Source: BC Student Outcomes, Baccalaureate Graduates Survey

12.7. Reference Tables

REFERENCE TABLE 1. TOTAL POPULATION

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CANADA	31,938,004	32,242,364	32,570,505	32,887,928	33,245,773	33,628,571	34,005,274	34,342,780	34,752,128	35,154,279	35,540,419
NL	517,402	514,315	510,584	509,039	511,543	516,729	521,972	525,037	526,874	528,194	526,977
PE	137,681	138,064	137,865	137,721	138,764	139,909	141,678	144,038	145,258	145,505	146,283
NS	939,612	937,899	937,869	935,071	935,865	938,194	942,073	944,469	944,835	942,930	942,668
NB	749,408	748,044	745,609	745,407	746,855	749,954	753,044	755,530	756,816	755,635	753,914
QC	7,535,278	7,581,192	7,631,873	7,692,736	7,761,504	7,843,475	7,929,365	8,007,656	8,084,754	8,153,971	8,214,672
ON	12,390,068	12,527,990	12,661,566	12,764,195	12,882,625	12,997,687	13,135,063	13,263,544	13,410,082	13,550,929	13,678,740
MB	1,173,223	1,178,296	1,183,524	1,189,366	1,197,774	1,208,589	1,220,930	1,233,728	1,250,499	1,265,405	1,282,043
SK	997,312	993,523	992,302	1,002,048	1,017,346	1,034,782	1,051,425	1,066,349	1,087,336	1,106,247	1,125,410
AB	3,238,387	3,321,638	3,421,361	3,514,031	3,595,755	3,679,092	3,732,573	3,790,191	3,888,632	4,007,199	4,121,692
BC	**4,155,017**	**4,195,764**	**4,241,691**	**4,290,988**	**4,349,412**	**4,410,679**	**4,465,924**	**4,499,139**	**4,542,508**	**4,582,625**	**4,631,302**

Source: Statistics Canada

REFERENCE TABLE 2. POPULATION AGED 15 YEARS AND OLDER

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CANADA	26,183,864	26,542,962	26,916,126	27,261,353	27,625,211	28,005,015	28,380,802	28,715,119	29,109,069	29,482,908	29,831,752
NL	434,417	433,950	432,580	432,076	434,672	439,437	444,633	447,945	450,091	451,787	451,036
PE	112,599	113,536	114,022	114,395	115,541	116,659	118,520	120,864	122,207	122,473	123,055
NS	782,759	785,587	789,659	789,774	792,614	796,669	801,992	806,416	808,756	808,764	809,879
NB	624,560	625,967	626,676	628,237	631,133	635,249	639,363	642,896	644,873	644,871	643,990
QC	6,250,723	6,312,853	6,381,280	6,455,191	6,530,866	6,613,369	6,699,012	6,774,231	6,843,080	6,899,643	6,947,221
ON	10,100,573	10,256,773	10,406,043	10,524,444	10,651,257	10,774,910	10,921,357	11,057,520	11,212,938	11,358,507	11,488,397
MB	939,125	947,154	954,849	961,206	968,918	978,615	989,539	1,000,740	1,015,574	1,028,987	1,042,926
SK	798,548	799,736	801,959	811,214	824,367	839,442	853,548	866,008	882,989	898,036	912,434
AB	2,607,195	2,685,261	2,775,228	2,859,320	2,931,200	3,003,802	3,048,052	3,095,446	3,177,398	3,275,923	3,369,226
BC	**3,455,621**	**3,503,056**	**3,553,590**	**3,603,968**	**3,661,951**	**3,722,977**	**3,779,260**	**3,815,842**	**3,862,747**	**3,904,664**	**3,953,627**

Source: Statistics Canada

REFERENCE TABLE 3. POPULATION OF IMMIGRANTS AGED 25 YEARS OR OLDER

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	141,576	148,940	163,966	159,518	150,427	159,279	164,327	182,649	162,503	173,089	179,786
NL	229	340	303	322	322	429	402	499	472	506	581
PE	95	177	188	334	565	853	1,015	1,567	1,051	651	634
NS	876	1,092	1,167	1,600	1,567	1,719	1,551	1,565	1,416	1,579	1,776
NB	407	502	630	981	1,002	1,119	1,184	1,324	1,212	1,362	1,295
QC	25,961	28,866	28,196	29,018	29,786	30,087	33,549	36,480	34,686	37,099	35,787
ON	76,396	78,410	87,135	79,186	70,333	71,451	69,773	77,015	64,983	67,120	72,709
MB	3,565	3,986	4,311	5,520	6,078	6,346	7,782	9,159	9,413	8,229	8,199
SK	925	1,117	1,202	1,585	2,047	2,770	4,025	4,549	5,348	6,821	6,937
AB	10,066	10,176	12,068	13,224	13,222	15,455	17,366	21,225	20,093	23,893	24,894
BC	**23,056**	**24,274**	**28,766**	**27,748**	**25,505**	**29,050**	**27,680**	**29,266**	**23,829**	**25,829**	**26,974**

Canada is sum of provinces (excludes Territories & unknown)
Source: Citizenship and Immigration Canada

REFERENCE TABLE 4. UNEMPLOYMENT RATE FOR ALL OCCUPATIONS (%)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	7.6	7.2	6.8	6.3	6.0	6.1	8.3	8.0	7.4	7.2	7.1
NL	16.4	15.6	15.1	14.7	13.5	13.2	15.5	14.4	12.7	12.5	11.4
PE	11.1	11.2	10.8	11.1	10.3	10.8	12.1	11.2	11.3	11.3	11.5
NS	9.1	8.8	8.4	7.9	8.0	7.7	9.2	9.3	8.8	9.0	9.0
NB	10.2	9.7	9.6	8.7	7.5	8.5	8.8	9.3	9.5	10.2	10.4
QC	9.2	8.5	8.3	8.1	7.2	7.2	8.5	8.0	7.8	7.8	7.6
ON	6.9	6.8	6.6	6.3	6.4	6.5	9.0	8.7	7.8	7.8	7.5
MB	5.0	5.3	4.8	4.3	4.4	4.2	5.2	5.4	5.4	5.3	5.4
SK	5.6	5.3	5.1	4.7	4.2	4.1	4.8	5.2	5.0	4.7	4.0
AB	5.1	4.7	4.0	3.4	3.5	3.6	6.6	6.5	5.5	4.6	4.6
BC	**8.0**	**7.2**	**5.8**	**4.8**	**4.3**	**4.6**	**7.7**	**7.6**	**7.5**	**6.7**	**6.6**

Source: Statistics Canada

REFERENCE TABLE 5. GROSS DOMESTIC PRODUCT ($ MILLION)*

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	1,243,829	1,324,940	1,410,710	1,486,918	1,565,900	1,645,974	1,567,007	1,662,757	1,770,014	1,831,228	1,893,759
NL	18,406	19,664	22,248	26,482	29,714	31,434	24,972	29,063	33,497	32,365	35,832
PE	3,829	4,024	4,147	4,387	4,620	4,767	4,947	5,202	5,409	5,514	5,788
NS	29,898	30,999	32,348	32,651	33,907	35,467	35,254	37,073	38,349	38,214	39,145
NB	22,746	24,116	25,272	26,378	27,869	28,422	28,825	30,082	31,409	31,751	31,900
QC	259,545	271,553	280,447	290,779	305,876	313,595	315,531	329,670	345,732	357,431	362,846
ON	505,471	530,243	552,769	574,292	597,803	604,282	595,433	629,500	658,635	679,616	695,705
MB	38,184	40,599	42,597	46,153	49,265	51,920	50,636	52,896	55,758	59,126	61,323
SK	37,493	41,614	45,110	46,517	52,253	67,695	60,326	63,379	74,605	78,873	83,222
AB	172,880	193,353	224,373	244,523	259,087	295,126	246,717	270,100	299,142	315,803	338,166
BC	**148,540**	**161,114**	**173,641**	**186,772**	**197,072**	**203,951**	**195,966**	**205,996**	**217,460**	**222,565**	**229,685**

* 2013 is the latest year for which information is available.
Source: Statistics Canada

REFERENCE TABLE 6. GROSS DOMESTIC PRODUCT ($2002 MILLION, CHAINED)*

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
CANADA	1,405,861	1,449,988	1,495,853	1,535,071	1,565,900	1,584,306	1,541,348	1,593,357	1,640,522	1,672,067	1,705,567
NL	25,541	25,372	26,104	27,195	29,715	29,369	26,464	28,033	28,904	27,592	29,588
PE	4,173	4,279	4,329	4,521	4,620	4,658	4,678	4,783	4,861	4,908	5,006
NS	32,739	33,046	33,366	33,476	33,907	34,625	34,753	35,806	36,073	35,950	36,042
NB	26,325	27,002	27,201	27,741	27,869	28,125	27,811	28,381	28,543	28,426	28,272
QC	284,795	292,111	296,594	300,580	305,874	311,626	309,683	316,886	323,210	328,082	331,231
ON	546,085	561,986	579,468	590,318	597,803	596,921	578,510	598,174	613,803	624,369	632,368
MB	43,947	44,955	46,169	47,872	49,265	51,157	51,048	52,379	53,487	55,252	56,486
SK	47,342	49,741	51,183	50,510	52,253	55,183	52,553	54,756	57,938	59,737	62,716
AB	217,844	229,864	239,963	254,809	259,087	263,515	252,811	264,164	279,277	291,855	302,966
BC	**168,011**	**174,591**	**183,235**	**191,101**	**197,072**	**199,270**	**194,214**	**200,628**	**206,225**	**211,124**	**215,218**

* 2013 is the latest year for which information is available.
Source: Statistics Canada

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